1994

A crosscultural comparison of the performance of Icelandic children to the norms of U.S. children on the Miller Assessment for Preschoolers : a pilot study

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Order Number 1358172

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San Jose State University, 1994

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A Crosscultural Comparison of the Performance of Icelandic Children to the Norms of U.S. Children on the Miller Assessment for Preschoolers: A Pilot Study.

A Thesis

Presented to

The Faculty of the Department of Occupational Therapy

San Jose State University

in Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

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May, 1994

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ABSTRACT

A CROSSCULTURAL COMPARISON OF THE PERFORMANCE OF ICELANDIC CHILDREN TO THE NORMS OF U.S. CHILDREN ON THE MILLER ASSESSMENT FOR PRESCHOOLERS: A PILOT STUDY

by Snaefridur Thora Egilson

This study was designed to determine whether differences existed in performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers (MAP).

The MAP was administered to 90 Icelandic children in three age groups of 30 children each. The scores of the Icelandic children were compared descriptively to the U.S. norms on each of the 27 subtests. The results of the study revealed minimal differences in performance on several of the subtests, but noticeable differences on others. This demonstrates the importance of studying the applicability of developmental instruments when using them in a culture different from that which was used to establish the norms. The findings provide a reference point for use of the U.S. norms in Iceland. Further research on the MAP in Iceland is necessary to determine the applicability of the scale for the Icelandic preschool population.

Acknowledgements

I would like to thank the many people who assisted with the completion of this study.

To Dr. Kathleen Barker Schwartz, my thesis advisor, my thanks for her time, knowledge and guidance. Special thanks to my thesis reader, Dr. Lela Llorens for her continued support and encouragement, and to Dr. Lucy Jane Miller, the author of the MAP, for her inspiration.
Dr. Bethany Shifflett is acknowledged for her advice on the data analysis.

Appreciation is extended to my colleagues at the State Diagnostic and Councelling Center in Iceland for making this study possible. My deepest thanks to Hlin Gudjondsdottir, OT, for her support with various requests and help with collection of data. And thanks to Sigridur Petursdottir and Gudrun Egilson for their professional advice and help with the translation of parts of the scale.

Last, but not least, I would want to thank all the Icelandic children who participated in the study, as well as their parents for the time set aside for their participation.

Table of Contents

Appendices

List of Tables

List of Figures

CHAPTER 1

INTRODUCTION

Purpose

The purpose of the study was to determine whether there are noticeable differences in subtest performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers (MAP).

Statement of the Problem

The Miller Assessment for Preschoolers (MAP) is a standardized instrument for the age group 2 years 9 months through 5 years 8 months. It is designed to identify preschool children who are likely to experience school related problems at a later time. It also provides a comprehensive clinical framework to help define a child's strengths and weaknesses and indications for remediation (Miller, 1988a). The MAP has been in use in Iceland for 6 years. As it is used in many settings to differentiate between normal children and children at risk, it is important to determine whether the performance of Icelandic children is similar or different from that of American children since the norms and scoring methodology developed in the United States are also being used.

Objective

The objective of the study was to determine whether or not there are noticeable differences in subtest performance between Icelandic preschool children and the U.S. normative data on the Miller Assessment for Preschoolers (MAP).

Research Question

The question to be answered in the study was:

Are there noticeable differences in subtest performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers (MAP)?

Definitions

Conceptual Definitions

Culture: Patterns of beliefs, values, and behaviors shared by social groups.

Gender: Whether an individual is male or female.

Norm: A standard achievement, represented by the average achievement of a large group of children.

Percentile: The percentage of persons in a sample who scored below a specific raw score.

Reliability: Consistency or thrustworthiness of measure.

Test Bias: A differential validity of a given interpretation of a test score for any definable, relevant subgroup of test takers.

Test Fairness: How tests are used by the society.

Validity: The extent to which a test measures what it claims to measure.

Operational Definitions

Icelandic Children: The 90 children who were randomly selected to be representative of the population of Icelandic children aged:

three years three months - three years eight months,

four years three months - four years eight months,

five years three months - five years eight months,

and participated in this study.

Miller Assessment for Preschoolers: A scale that is designed to evaluate preschool children with mild to severe developmental delays.

Noticeable Difference: Marked patterns and trends that emerge to differentiate the two samples.

Since the purpose of the MAP is to identify children with developmental delays, the distribution of scores is skewed. On many of the subtests the best score a child can receive represents only average

ability. Therefore, differences within low scores and the way in which the test classifies Icelandic and U.S. children as "at risk" will be used to differentiate. The analysis focuses on the percentages of Icelandic children classified as at risk compared to percentages of U.S. children. Generally, if the number of Icelandic children classified at risk is less than an interval of 10 percentiles compared to U.S. children, the differences are not classified as noticeable. If the differences exceed 10 percentiles, the differences are classified as noticeable. The MAP scoring criteria is based on a color-coded system. A Red score is considerably more extreme than a Yellow score, and has a greater effect on the Total Score. Hence, scores within the Red category weigh twofold relative to scores within the Yellow category when comparing the performance of the two samples.

Preschoolers: Children aged two years nine months through five years eight months.

Subtest Performance: Performance on the 27 subtests of the MAP.

U.S. Children: The 1204 children who were randomly selected to be representative of the population of preschool children in the United States during the standardization of the MAP.

U.S. Normative Data: The normative information established for the MAP in the United States.

Significance of the Study

When applying a test in a different culture from that which was used to norm the scale, it is accepted that the instrument should be standardized and age norms verified for that culture. For a small nation like Iceland, the process of standardization may become very expensive. Furthermore, a good standardization in itself does not ensure a valid and useful assessment. "A standardization does neither secure the reliability nor the validity of the assessment, but only that a comparison with an external reference exists" (Arnkelsson, 1988, p. 26-27).

If no noticeable differences are found between the samples of the Icelandic children and the U.S. children on the Miller Assessment for Preschoolers in this study, and if the sample is truly representative of the population, it implies that a new standardization in Iceland may not be necessary. "It can be concluded that the U.S. norms are relatively accurate for use in your country and you can use norms already provided in the MAP manual." (Miller, 1983. p. 4). If, however, the results of this study demonstrate noticeable differences in subtest performance between the Icelandic and the U.S. children, it implies that the MAP cannot be administered and scored in Iceland, using the methodology and normative data developed in the U.S.. Therefore, further research and possibly a new standardization in Iceland may be necessary.

Pediatric occupational therapists in Iceland work at assessment centers, and within the Icelandic school system. There are no standardized Icelandic instruments with which therapists can assess preschool children with developmental delay. The MAP has been the main evaluation tool used by pediatric occupational therapists in Iceland for the past few years. As it is used in many settings to differentiate between normal children and children at risk, it is urgent to determine whether or not the normative information developed in the U.S. can be used for valid decisions about the presence of dysfunction in Icelandic children. This study is the first step toward investigating the applicability of the MAP in Iceland.

Assumptions

The assumptions held by the researcher are:

1. The sample in the study is representative for Icelandic preschool children within the capital area.
2. If crosscultural differences in development between Icelandic and U.S. children exist, these will be reflected in the study.

Limitations

The sample size (N=90) is a limitation as it is usually preferable to have a larger sample. However, a pilot study does not require a large

sample. Secondly, the sample was not chosen from the entire country, but confined to the capital area where aproximately 60% of the Icelandic preschool children live. These limitations affect the generalizability of the research.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This literature review will initially address diagnostic assessments in pediatrics. Secondly, the MAP will be described and a summary of some of the critical reviews to which the scale has been subjected will be presented. Finally, issues in crosscultural research will be emphasized, followed by discussion of the findings of other crosscultural comparisons on the MAP.

Diagnostic Assessments

"Early identification and early intervention for children with developmental or educational problems have been widely promoted as a valuable responsible approach to serving children with special needs" (Lichtenstein & Ireton, 1991, p. 488). Diagnostic assessments are commonly used "to determine strengths and limitations, eligibility for special needs programs and services, and possible avenues of remediation" (Miller, 1993, p. 3). The need for reliable and valid tests for the assessment of children who are at risk for developmental dysfunction

has been identified by authors in numerous disciplines. Campbell (1989) stated that "although standardized tests are continually criticized for labeling, and lack of cultural validity for some groups in the population, such as minorities, they remain the best known means of sorting, classifying, diagnosing, and measuring progress" (p. 3). There is general consensus that "insufficient attention has been focused on the quality of existing instruments used in preschool assessment" (Bracken, 1987, p. 313). It is therefore of utmost importance that practitioners within the field carefully select their instruments, with emphasis on the technical adequacy of the scales in use.

In 1984, McCauley and Swisher identified 10 psychometric criteria compiled from Standards for Educational and Psychological Tests (American Psychological Association) to represent basic information to be considered in the selection of norm-referenced tests. The criteria included: description of the normative sample, adequate sample size, item analysis, the reporting of measures of central tendency and variability, concurrent validity, predictive validity, test-retest reliability and interexaminer reliability.

Miller and Sprong (1986) used those criteria in a psychometric and qualitative comparison of four widely used preschool screening instruments. These were the CIP (Comprehensive Identfication Process),

DIAL-R (Developmental Indicators for the Assessment of Learning-Revised), DDST-R (Denver Developmental Screening Test) and the MAP. The result indicated that the DIAL-R and the MAP met most of the requirements, the MAP met seven criteria in full. One more criterion, evidence of predictive validity, has since been established.

Within the field of occupational therapy there has long been a lack of objective measurement tools. To date, many of the tests in use in pediatric practice have been developed by professionals other than occupational therapists. However, current trends suggest that therapists are becoming increasingly interested in the use of standardized tests and in conducting research to develop new tests. Only a few of the most commonly used evaluation tools are designed for the preschool age group, and address the range of abilities as the MAP. In recent years the MAP has become popular among pediatric occupational therapists, it is widely used and highly respected.

The Miller Assessment for Preschoolers (MAP)

Description

Miller Assessment for Preschoolers (MAP) is a standardized instrument for the age group two years nine months - five years eight months. It is designed to provide a statistically sound assessment

procedure that may be used to identify preschool children with mild to severe delays, and who need further evaluation. In addition, it provides a "comprehensive structured clinical framework to identify a child's strenghts and weaknesses, and to indicate possible avenues of remediation" (Miller, 1988a, p.2). The 27 subtests of the MAP are divided into five Performance Indices:

1. Foundations: Basic motor tasks and the awareness of sensation
2. Coordination: Combination of more complex sensory and motor components.
3. Verbal: Language skills.
4. Non-Verbal: Reasoning skills.
5. Complex Tasks: Combination of sensory, motor and cognitive abilities.

Each Index falls into one of the three types of developmental abilities assessed by the test: Sensory and motor abilites, cognitive abilities, and combined abilities. Some subtests may fall into more than one Index. Abilities assessed by the MAP are listed in Table 1.

Table 1

Abilities assessed by the MAP

Abilities Assessed	Performance Index	Number of Subtests in Index
Sensory and Motor	Foundations	10
	Coordination	7
Cognitive	Verbal	4
	Non-Verbal	5
Combined	Complex Tasks	4

Norms for the MAP Total Score and Performance Index Scores are expressed in terms of percentiles. A color-coded system is used to indicate whether a child is functioning in the normal or delayed range. The color classifications can be defined as follows:

Red: The child's performance is at or below the 5th percentile rank. The child appears to need further evaluation.

Yellow: The child's performance is in the 6th to 25th percentile ranks. The child should be watched carefully for developmental delays.

Green: The child's performance is at or above the 25th percentile rank. The child appears to be functioning at an average or above-average level.

The MAP is the result of several years of research involving over 4,000 children and 800 items. The instrument was designed to contain a sufficient number of easy items so that the final score would distinguish among average, low average, and severely dysfunctional groups. Specific patterns of scores among dysfunctional groups that can serve as guidelines to generate hypotheses about performance, have been described by the author (Miller, 1988b).

Critical Reviews

The MAP has been subjected to numerous critical reviews by experts

in the areas of psychometrics and child development. These reviews have presented balanced critiques of the strengths and limitations of the scale, and generally they have been favorable. In general, professionals who have used the MAP find the scale to be useful and reliable. "Critical opinion and research evidence to date suggest that the MAP is psychometrically well developed and clinically useful" (Daniels & Bressler, 1990, p. 49). DeGangi (1983) was critical of the test; however, as data that compared scores and score patterns of the functional delay group with the normative sample were not provided at that time. "Without this information it is difficult to determine the effectiveness of the MAP in screening children with functional delays" (p. 408).

Since 1983, three predictive validity studies have been completed, (Miller & Lemerand, 1986; Miller, Lemerand, & Cohn, 1987) that support the MAP's validity. However, Miller (1988a) suggests that more work needs to be completed on the predictive validity of the MAP.

Schouten and Kirkpatrick (1993) stated that the reviews of the studies that evaluated the test's predictive accuracy were overly optimistic and "far more positive than was warranted by the data" (p. 17). They called attention to the risk of underreferral, especially the 5% cutpoint when the MAP is used as a preschool screening tool. Humphry and King-Thomas (1993) partly agree with Schouten and Kirkpatrick

on the issue of risk of underreferral when focusing on the respective cutpoint. However, they stressed other important features of the MAP, such as depth of item development, and contribution of unique information about children with developmental delays. Furthermore, they stated that when the MAP is used with observations, it is an excellent tool to "identify the child's current strengths and needs, ...for planning intervention and documenting change" (p. 46).

A review in Buros' The Ninth Mental Measurements Yearbook concluded: "The MAP appears to be the best available screening test for identifying preschool children with moderate 'preacademic problems' ...it is short, carefully designed and well standardized...and will quite likely play a major role for many years" (Deloria, 1985, pp. 975-976).

Crosscultural Research

General Considerations

Extreme care must be taken when transferring standardized tests between cultural environments, as the norms may differ. "Each culture encourages and fosters certain abilities and ways of behaving, and discourages or suppresses others" (Anastasi, 1988, p. 358). The differences may affect all areas of development, as the normative rates at which children acquire social, linguistic, and motor skills can vary

across cultures. There is a growing interest in crosscultural research on psychomotor development in children. However, it is often difficult to compare data across cultures as the methods used and conditions under which the data are collected differ substantially (Wolanski, 1987). Furthermore, it can be questioned if what is being measured by a test is developmentally universal or specific. This requires attention to the comparability of a test within different cultural groups. Validity and reliability studies are important in establishing whether the psychometric characteristics of a test differ significantly in samples from populations that were not included in the standardization population (Jensen, 1980). Fairness to children of different sociocultural, racial, and language background is a particularly important consideration in preschool assessment. Hence, professionals must ensure that an instrument is psychometrically adequate for children of diverse backgrounds when applying it in a different culture than that which was used to establish the norms. If differences between groups exist, one must then determine whether the differences are a function of reality or of error in the test (test bias). According to Gregory (1992), a test should be considered biased if it is differentially valid for different subgroups.

Reviews of Crosscultural Studies

A crosscultural comparison by Williams and Williams (1987) of the norms on the DDST, which were developed in Denver (USA), Metro-Manila (Philippines), Tokyo, Okinawa (Japan), and the Netherlands showed considerable differences in performance. According to the author of the study, "the differences obtained among the crosscultural comparisons may be explained by variables related to age, culture, and child socialization and training. Socioeconomic level is also a possible explanatory variable" (p. 47). Kaplan and Dove (1987) studied Ache children of Eastern Paraguay. Their results suggest that although the Aches followed the same sequence of developmental stages, they acquired some developmental skills at a much slower rate than did American children. Mardell-Czudnowski, Chien-Hou and Tien Miau (1987) studied differences between American and Chinese children on the Dial-R in Taiwan. Their findings imply that the skill development of the Taiwan children is similar to that of American children, with some notable exceptions, some of which develop earlier in Chinese children, others develop earlier in American children. Saeki, Clark and Azen (1985) found differences in performance between the U.S. normative sample and groups of Japanese and Japanese-American children in a study on the Design Copying and Motor Accuracy-Revised Tests of the Southern

California Sensory Integration Tests. The authors suggested that the differences may be associated with the effects of certain Japanese cultural practices on fine motor ability. In this study, the raw data on the U.S. normative sample were unavailable, and the published average scores were used for the comparison. This procedure may limit the value of the study.

As children from differing cultures develop at different rates, using a set of norms from one culture in different culture can easily misrepresent the child's developmental status. A pilot study in Iceland on the Bayley Scales of Infant Development, showed that the Icelandic study group scored significantly higher than the U.S. standardization sample on the mental scale, while the difference was only marginal and not significant for the motor scale. (Sæmundsen, Halldórsson & Arnljótsdóttir, 1990). "The results of this study stressed the need to conduct research on developmental tests, when they are moved from one cultural environment to another" (p. 17). This pilot study was conducted on children in the age groups of 6, 8 and 10 months. There is general consensus that after 2 years of age, the environmental factors become even more significant.

Frankenburg, Dodds, Fandal, Kazuke and Cors (1970) found no marked difference in the ages at which children of different occupational groups performed on the DDST during the first 2 years of life. After age 2

years the children of families of higher socioeconomic status performed a number of the language items at an earlier age than those of families of a lower socioeconomic status. A further comparison by Frankenburg, Dick and Carland (1980) on the functioning level of development for infants and preschool aged children of differing socioeconomic status and ethnic groups in Denver, demonstrated similar results. After 20 months of age, children in a cross-sectional sample were advanced in comparison to children of unskilled laborers in all test sectors except for the personal-social sector. While keeping the occupation group constant, differences between ethnic groups showed less variation in rates of development.

According to the author of the MAP, Dr. Lucy Jane Miller, only a few countries have undertaken a crosscultural study on the scale. The most advanced study was undertaken in Japan, and in 1989 a Japanese version of the Miller Assessment for Preschoolers (JMAP) was published in Japan, preceded by several pilot studies (Tsuchida, 1992). The test is a revised version of the MAP. The authors found it necessary to change half of the subtests in items and five of the subtests in test materials. The main reasons for these changes were different language culture, a difference of passing rates and importance of cultural familiarity for children.

Normative data from selected subtests were used to compare the

performance of Japanese and US children. Only 9 subtests were selected "because these were the only subtests in which the item's normative data were collected in exactly the same manner as in the MAP" (p. 38). Significant differences in score distribution among the groups were found in a few of the subtests, especially regarding eye-hand coordination, where Japanese children performed better. These results seem to support findings by Saeki, Clark and Azen (1985) on fine motor ability measured on Japanese and U.S. children by selected subtests of the Southern California Sensory Integration Tests.

Furthermore, Tsuchida compared JMAP score patterns among a Japanese dysfunctional population to MAP score patterns that are based on an U.S. dysfunctional population. Eight different score patterns emerged, on the JMAP whereas six were found to be basically similar to the U.S. score patterns reported by Miller (1988b). These findings imply that the patterns may have cross-cultural validity.

A crosscultural comparison has also been undertaken in Israel on age groups II and VI (Schneider, Parush, Katz, & Miller, 1993). Despite differences in performance on several of the subtests, no significant differences between the two samples in either age group were found on the MAP Total Score, or on four out of five Performance Indices. However, Israeli children performed at a significantly lower level than the U.S.

sample on the Foundations Index. The results indicate that the overall performance of Israeli children is not significantly different from the performance of U.S. children on the MAP. In a few other countries similar studies are in process, but nothing has been published thus far. As the Miller Assessment for Preschoolers is designed for the age group 2.9-5.8 years, it is important to verify the norms when using the test outside the United States.

Summary

Use of reliable, valid instruments has become a high priority for the profession of occupational therapy. Few standardized instruments address the sensory, neurodevelopmental, motor, and perceptual aspects of behavior, which are of concern for therapists working with children. The Miller Assessment for Preschoolers (MAP) is a highly respected and widely used scale, intended to evaluate preschool children with supspected preacademic problems.

The review of the literature suggests that differences in child development exist across cultures. These differences may be explained by variables related to culture, age, child socialization and training. Socio-economic status is also an explanatory variable. Therefore, using a set of norms from one culture in another culture, has the potential to mis-

represent a child's true developmental status. If developmental differences across cultural groups exist, then such differences may affect childrens' performance on the MAP. This study is designed to provide a reference point for use of the U S. norms of the MAP to Icelandic children. It is the first step in an investigation of the applicability of the scale in Iceland.

CHAPTER 3

DESIGN AND METHODOLOGY

Purpose

The purpose of the study was to determine whether there are noticeable differences in performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers (MAP).

Question

The study was designed to answer the following question:

Are there noticeable differences in subtest performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers (MAP)?

Research Design

The design can be classified as test or instrument assessment research. This was a pilot study, non-experimental research, as there was no manipulation involved.

Description of the Icelandic Population

The population of Iceland is approximately 260,000 and relatively

homogenous in cultural and ethnic/racial terms. Everyone speaks the same language. Approximately 60% of the population lives in the capital area (Reykjavík and suburbs), and 80% of Icelandic preschool children live within 70 miles radius from Reykjavík. The rest of the population lives in small villages and farms, spread mainly along the coast.

Sample Selection

Age and Sex

The sample consisted of 90 children in three age groups, 30 children aged three years three months - three years eight months, 30 children aged four years three months - four years eight months, and 30 children aged five years three months - five years eight months. Age at the time of testing was determined by rounding to the nearest month of age. (See Table 2).

Geographic Region and Community Size

Geographically, the study was confined to the capital area, where approximately 60% of Icelandic preschool children live, according to the Icelandic Census Bureau. The test population was chosen from Reykjavík and five neighbour- communities, and randomized and stratified by the Icelandic Census Bureau, according to age, sex, and size of residential community.

Table 2

Age at Time of Testing

Age group	Age range	Median age
2	3:3-3:8	3:6
4	4:3-4:8	4:6
6	5:3-5:8	5:6

Each age group included 15 boys and 15 girls.

Procedure

A list of prospective children was compiled by the Icelandic Census Bureau. Parents were informed about the study by phone and asked for their consent (Appendix F). If they gave a permission for their child to participate, they were sent a packet including a letter (Appendix E), a consent form (Appendix C), a list of questions regarding the child's health, and some biographical information (Appendix D). A stamped addressed envelope was attached to each packet, but parents were also given the option of returning the forms when they brought in their child for testing. The information was gathered to determine whether the sample was truly representative for the population intended. The study excluded children who exhibited noticeable physical, mental or emotional impairment, did not speak Icelandic as their first language, and who did not live at home. If a parent was reluctant to have his/her child tested, the child was dropped from the sample and the next child on the random list was selected. Day care organizers in the respective communities were contacted and gave their permission for testing of respective children at their day care centers, if the parents so wished.

Parent Education and Occupational Level

Information on socio-economic variables, such as education and

professional category of mother and father was gathered to further describe the sample. Educational status and occupation were determined by a self-report from the parents of participating children. Taxonomy of parents´ occupation was performed according to procedures established by University of Iceland, Department of Social Studies (Ólafsson, 1990).

Tester Selection

Two occupational therapists, including the researcher, participated in the study. Both had pediatric and standardized testing experience, including several years of experience in the use of the MAP. Both testers completed the MAP procedure reliability checklist prior to testing. Furthermore, detailed instructions in the test manual regarding test administration and scoring procedures and a video training tape, helped to insure good interrater reliability.

Development of an Icelandic Translation

Parts of the tests (Verbal Index, Item Score Sheets and Behavior during Testing) had already been translated prior to the undertaken of this study. The subtests in the Verbal Index were adjusted with a consultation from a speech pathologist to secure the qualitative evaluation of the translation. As a part of this study, a blind-back review was performed on

the Verbal Index by a professional translator and necessary modifications made. Furthermore, other parts of the translation were adjusted. The translation was approved by other occupational therapists in Iceland who are familiar with the test.

Administration of the Instrument

The testing took place in a three weeks period, (August 18 - September 5, 1993). The children were tested either at the researcher´s place of work, State Diagnostic and Counselling Center (SDCC) in Iceland, or at the child´s day care center, according to the parents´ convenience. 80 children were tested at SDCC and 10 children at their preschool setting. Testing time per child was approximately 35-40 minutes. Prior to testing each child, an emphasis was put on establishing good rapport. The subtests were administered in the order in which they appeared in the manual and on the score sheets, except when a variation in the order was believed to facilitate a child´s performance. The "Behavior during Testing" checklist was completed after testing each child.

Data Analysis Procedures

Analysis of the data was performed by the researcher, under guidance of a measurement consultant. The statistical software used to

analyze the data was SPSS. As the raw scores for the U.S. standardization sample were unavailable, a statistical analysis of the differences between the U.S. and Icelandic samples was not possible. Hence, a descriptive comparison was made with the large random U.S. sample of 1204 children for each of the 27 subtests. The raw scores of the Icelandic children in each age group were converted to percentile ranks to enable a comparison to the normative data of the U.S. children of the same age group. The analysis focused on the percentages of Icelandic children classified as "at risk" compared to percentages of U.S. children. If the number of Icelandic children classified as "at risk" was less than an interval of 10 percentiles compared to the number U.S. children in the same category, the differences were not classified as noticeable. If the differences exceeded 10 percentiles, they were classified as noticeable. The MAP scoring criteria is based on a color-coded system. A Red score is more extreme than a Yellow score, and has a greater impact on the Total Score. Hence, scores within the Red category weighed twofold relative to scores within the Yellow category when comparing the performance of the two samples.

Descriptive statistics were also used to analyze the demographic characteristics of the subjects. A comparison of parents´ occupations was made to the Ólafsson (1990) study on socioeconomic status in Iceland, and

parent´s occupation and professional level of the Icelandic and the U.S. standardization sample were also compared.

CHAPTER 4

DATA AND RESULTS

Introduction

This chapter presents the data and the results of the study. The findings are presented as they relate to the question to be answered in this research: Are there noticeable differences in subtest performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers (MAP)? Data are presented in both narrative and table form.

Analysis of the differences in subtest performance between the two samples focused on noticeable patterns and trends that emerged to differentiate the two samples. The purpose of the MAP is to identify children with developmental delays, and thus skewed distribution of final scores facilitates this process. The test has a large number of items that discriminate between mild and severe delays, but it does not distinguish between high-scoring examinees. On many of the subtests the best score a child can receive represents only average ability. Therefore, differences within low scores and how the test classified Icelandic and U.S. children as "at risk" according to the Red and Yellow cutoff points were emphasized in this study. No color was assigned to the Icelandic children, as further

research is necessary to determine whether these are appropriate and valid for use in Iceland.

Demography of the Icelandic Sample.

The demographics of the study sample were examined. Table 3 presents the demographic characteristics of the population tested. Very few parents were reluctant to have their child tested. Hence, retrition from the sample was minimal and nothing implied that it was systematic.

Table 4 presents a comparison of parents´ occupation to the Ólafsson study of 1990. The study that described standards and ways of living in Iceland, is commonly used as a reference point on socioeconomic status in Iceland. It appears that there are more parents with managerial and professional jobs in the MAP study sample, and that laborers are less common than in the Ólafsson study. Other professional levels appear to be similarly represented in the two samples. A possible explanation is that the Ólafsson study was confined to the whole country, but the MAP study was confined to the capital area only.

A comparison to the U.S. standardization sample was also performed; however, it is limited by the fact that in the MAP manual, parent´s education and professional levels are noted for head of household only. Table 5 presents a comparison of the demographic characteristics of

Table 3

Demographic characteristics of the Icelandic sample.

	Age group II	Age group IV	Age group VI
Gender			
Male	30	30	30
Female	30	30	30
Size of community			
> 30,000	13	17	22
10,000-29,999	13	8	5
2,500-9,999	4	3	3
500-2,499		2	
Mother´s education			
< 9 years		2	
9 years elementary education	7	6	5
1-3 years in high school	13	10	10
High school graduate	6	5	4
1-3 years in college	2	1	4
College graduate	2	6	7
Father´s education			
< 9 years		1	
9 years elementary education	3	2	5
1-3 years in high school	13	14	9
High school graduate	6	5	5
1-3 years in college	3	1	
College graduate	5	6	10
Mother´s occupation			
Managerial & professional	7	10	11
Technical, sales, & service	6	6	9
Farming & fishing		1	
Production, mechanical, & repa	2	1	2
Laborer	4	1	4
Not in labor force	11	11	4
Father´s occupation			
Managerial & professional	8	9	12
Technical, sales, & service	8	4	4
Farming & fishing		2	3
Production, mechanical, & repa	10	10	8
Laborer	2	4	2
Not in labor force	1		

Table 4

Comparison of demographic characteristics of the MAP and the Ólafsson´s study samples in Iceland. By percentages.

	MAP study sample*	Ólafsson study sample**
Parents´ occupation		
Managerial & professional	38	14
Technical, sales, & service	25	26
Farming & fishing	4	6
Production, mechanical, & repair	22	21
Laborer	11	33

Note. *N = 150, **N = 832.

The classification is based upon the occupation of employed persons only.

Table 5

Comparison of demographic characteristics of the Icelandic and the U.S. samples. By percentages.

	Icelandic sample*	U.S. sample**
Mother's education		
< 9 years	2	1
9 years elementary education	20	1
1-3 years in high school	37	5
High school graduate	17	31
1-3 years in college	8	29
College graduate	16	33
Father's education		
< 9 years	1	1
9 years elementary education	11	1
1-3 years in high school	41	6
High school graduate	18	25
1-3 years in college	5	23
College graduate	24	44
Mother's occupation		
Managerial & professional	31	33
Technical, sales, & service	24	38
Farming & fishing	1	1
Production, mechanical, & repair	6	5
Laborer	10	1
Not in labor force	29	22
Father's occupation		
Managerial & professional	33	53
Technical, sales, & service	18	14
Farming & fishing	6	1
Production, mechanical, & repair	32	25
Laborer	10	6
Not in labor force	1	1

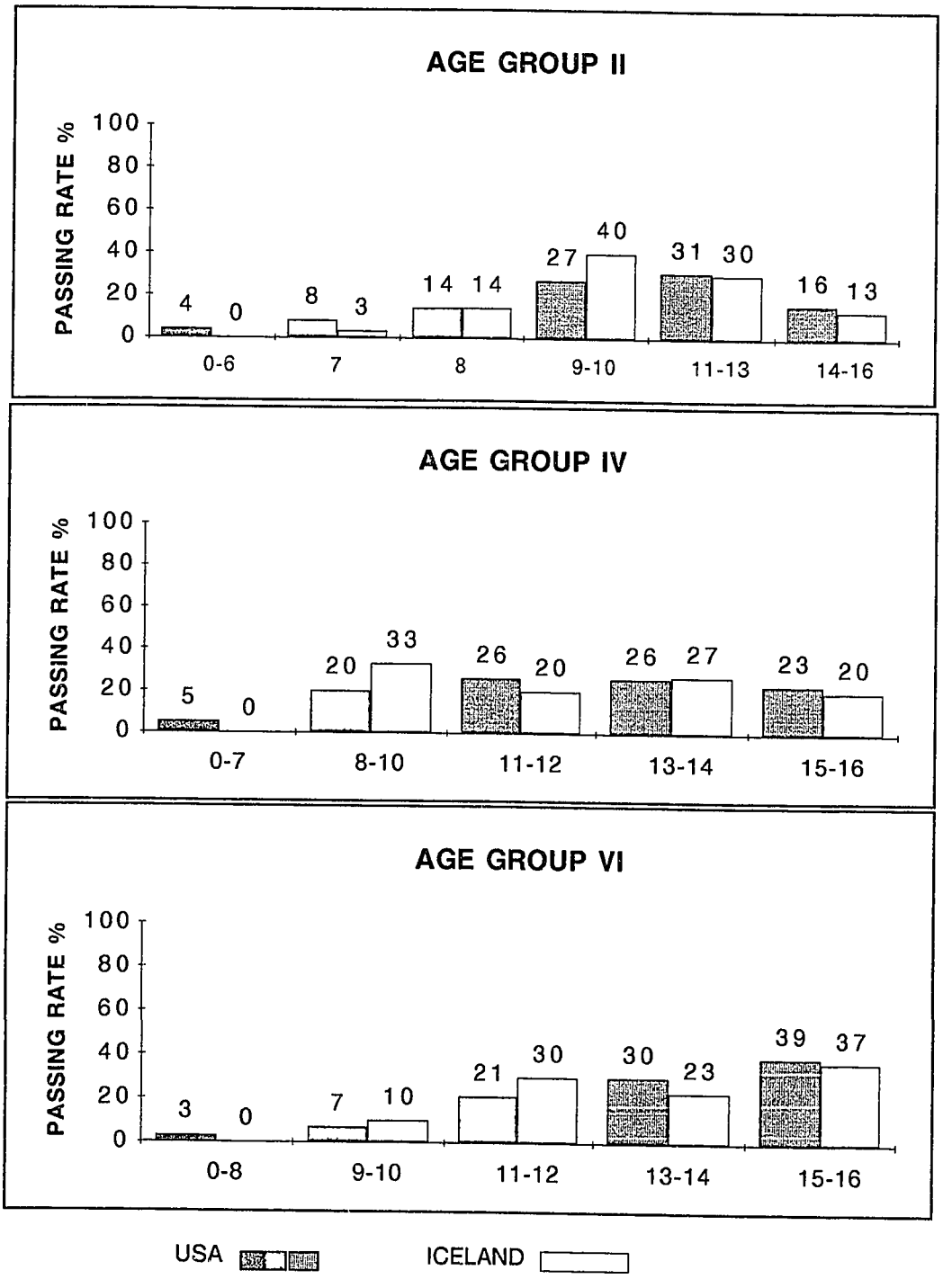
Note. *N = 177, **N = 1204.

the two samples. It would seem to appear that the parents in the U.S. standardization sample are of somewhat higher socioeconomic status than the parents of the Icelandic children that participated in this study.

Research Findings

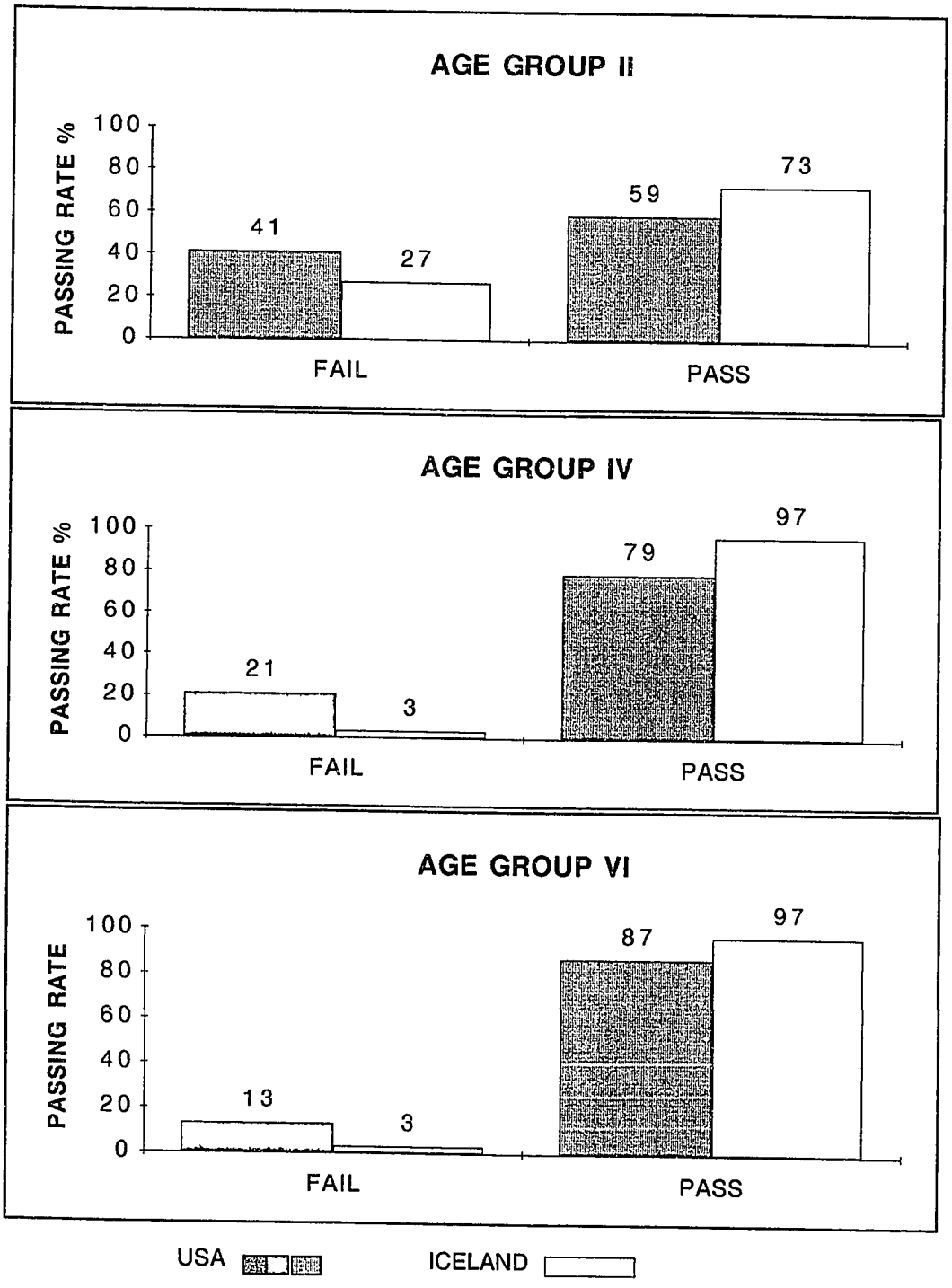
In this study, less range was obtained on several of the subtest scores than within the U.S. standardization sample. Hence, the Icelandic children obtained less of the very low scores, but also did not obtain as many of the highest scores possible. This affects the conclusion of the study, as the main focus was on the distribution among the lower scores. Figures 1 to 27 present the performance of the two samples on each of the 27 subtests in percentages, and allow for a comparison and inspection of differences. The order of the subtests is the same as presented in the MAP manual. Figures A-28 to A-33 in Appendix display the percentile rank order for the Icelandic sample on each of the 27 subtests. These figures can be compared to figures A-34 to A-39 that display the performance of the same three age groups within the U.S. standardization sample. The data reveal that there are minimal differences between the performances of the two samples on several of the subtests, but noticeable differences on others. On some of the subtests, the U.S. children tend to perform better, while the Icelandic children perform better on others. Furthermore, on

Figure 1. Tower.



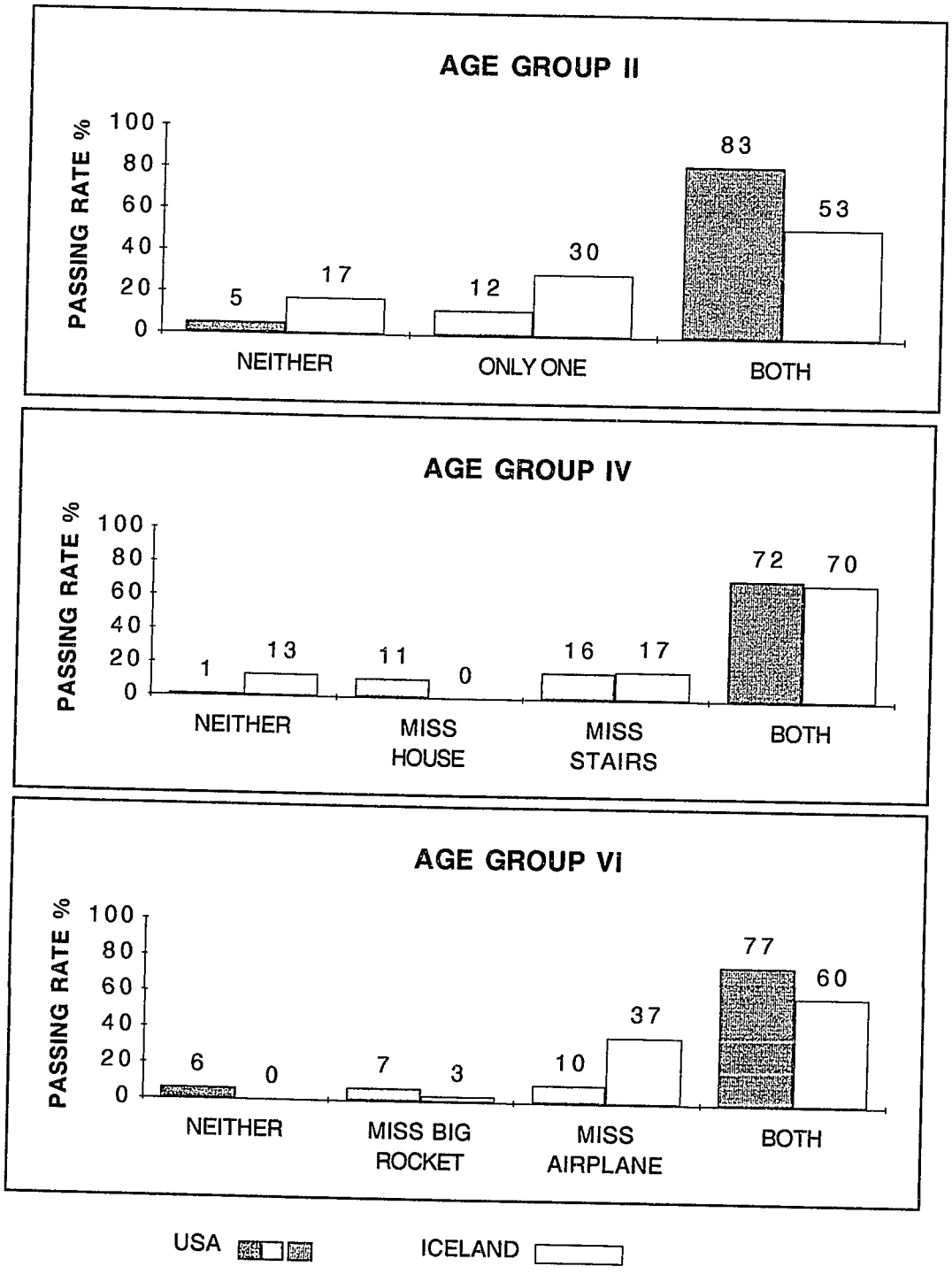
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 2. Sequencing.



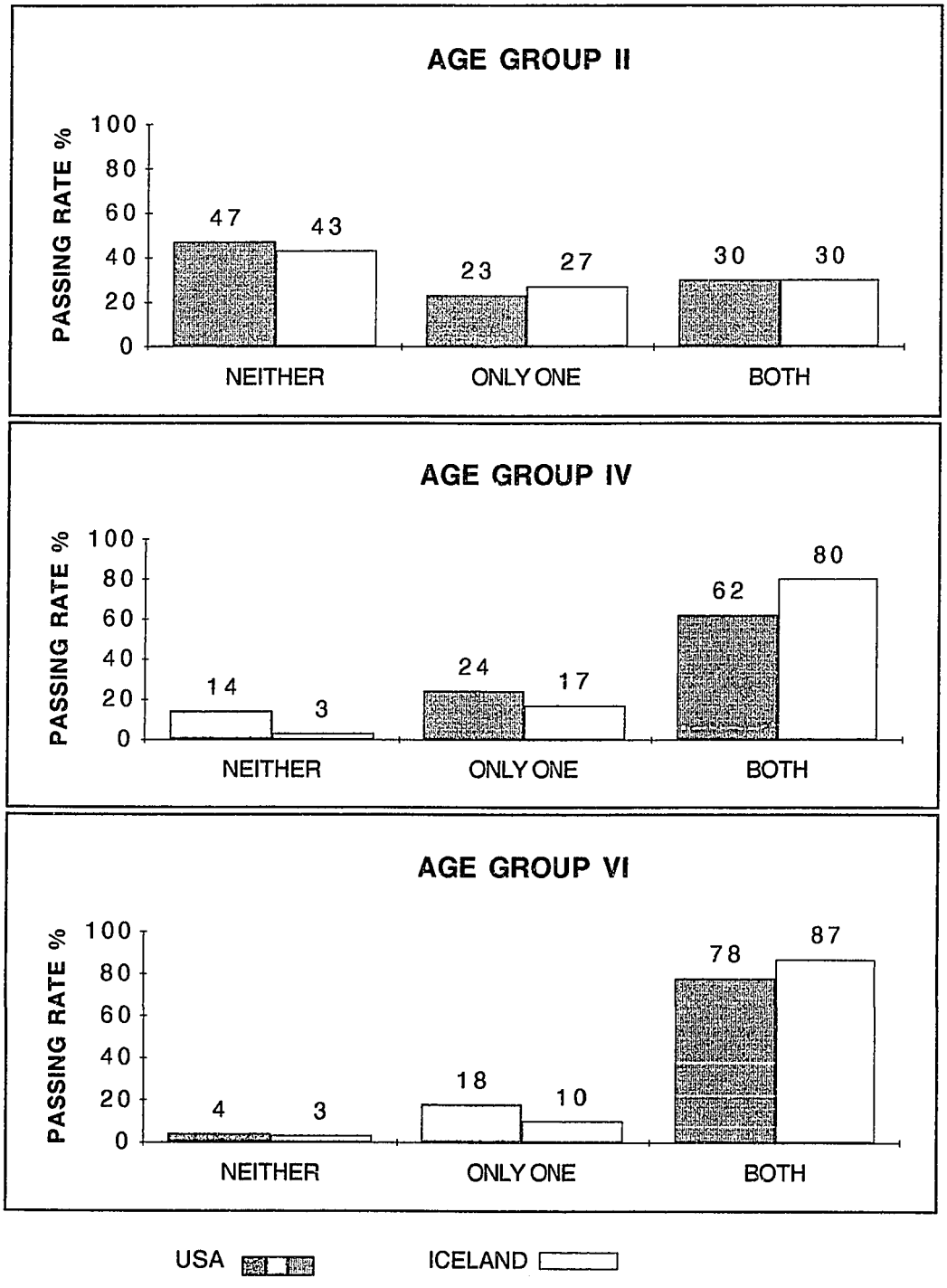
Note. The text below the bar graphs indicates subtest raw scores.

Figure 3. Block Designs.



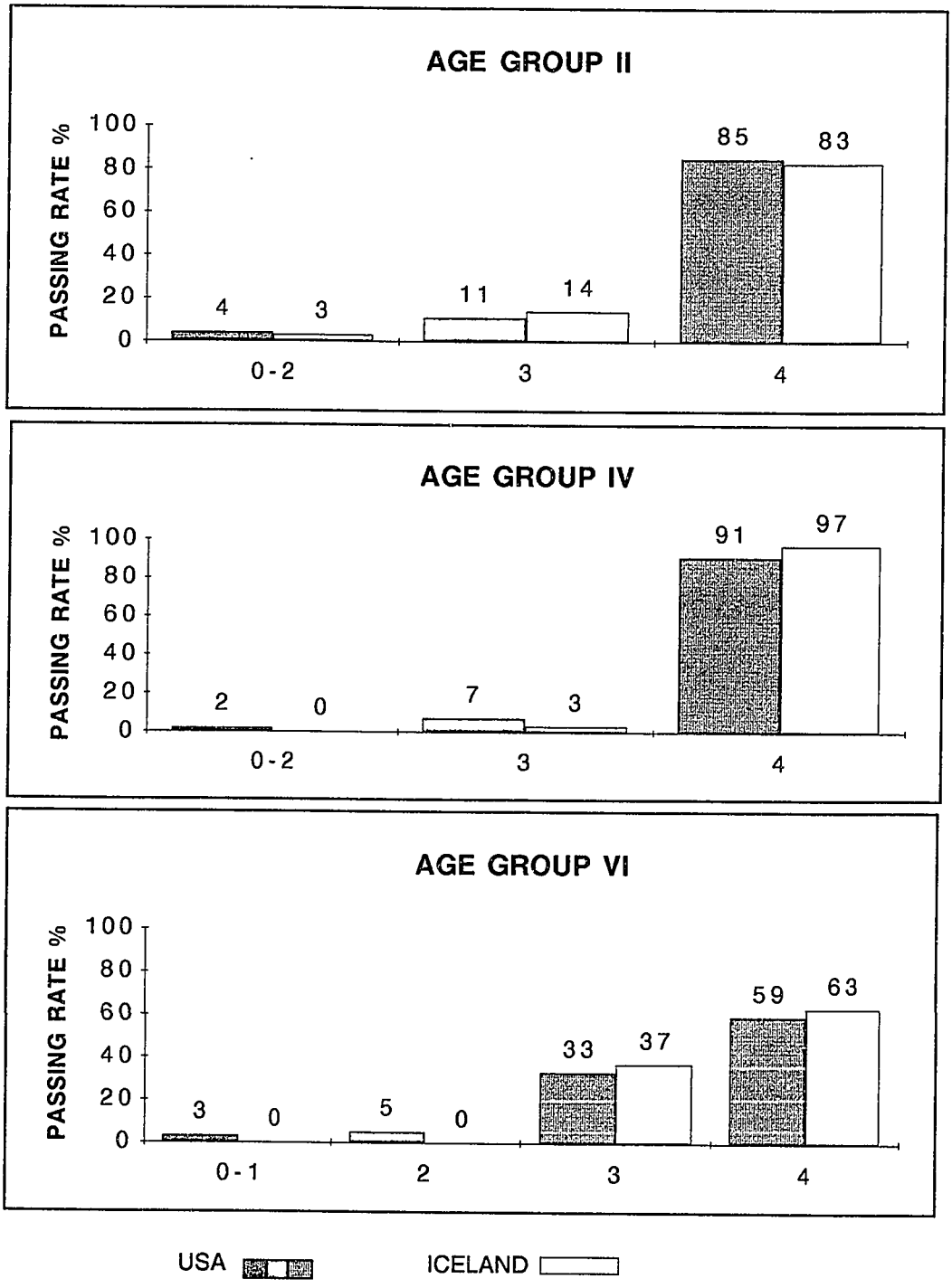
Note. The text below the bar graphs indicates subtest raw scores.

Figure 4. Block Tapping.



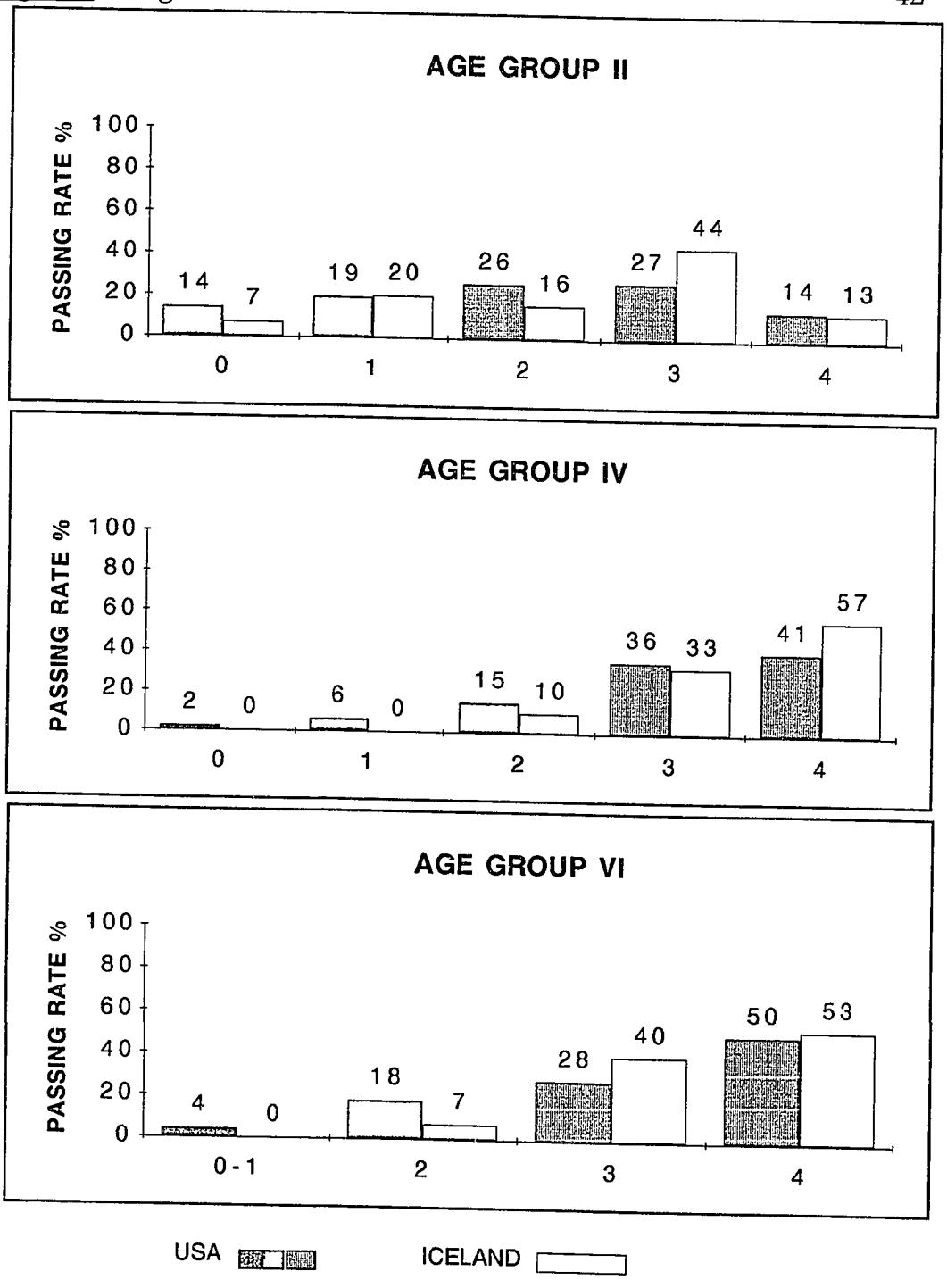
Note. The text below the bar graphs indicates subtest raw scores.

Figure 5. Stereognosis.



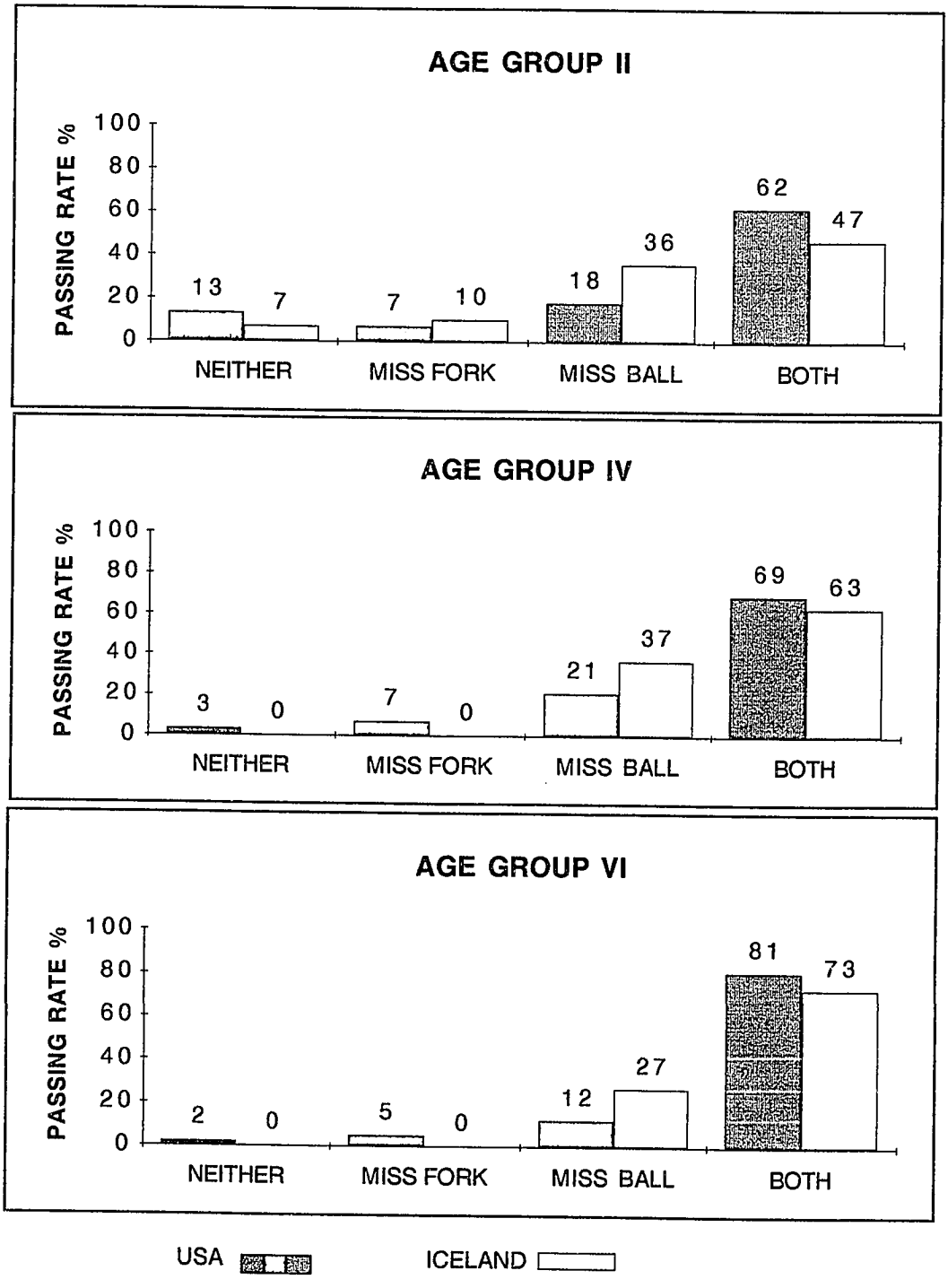
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 6. Finger Localization.



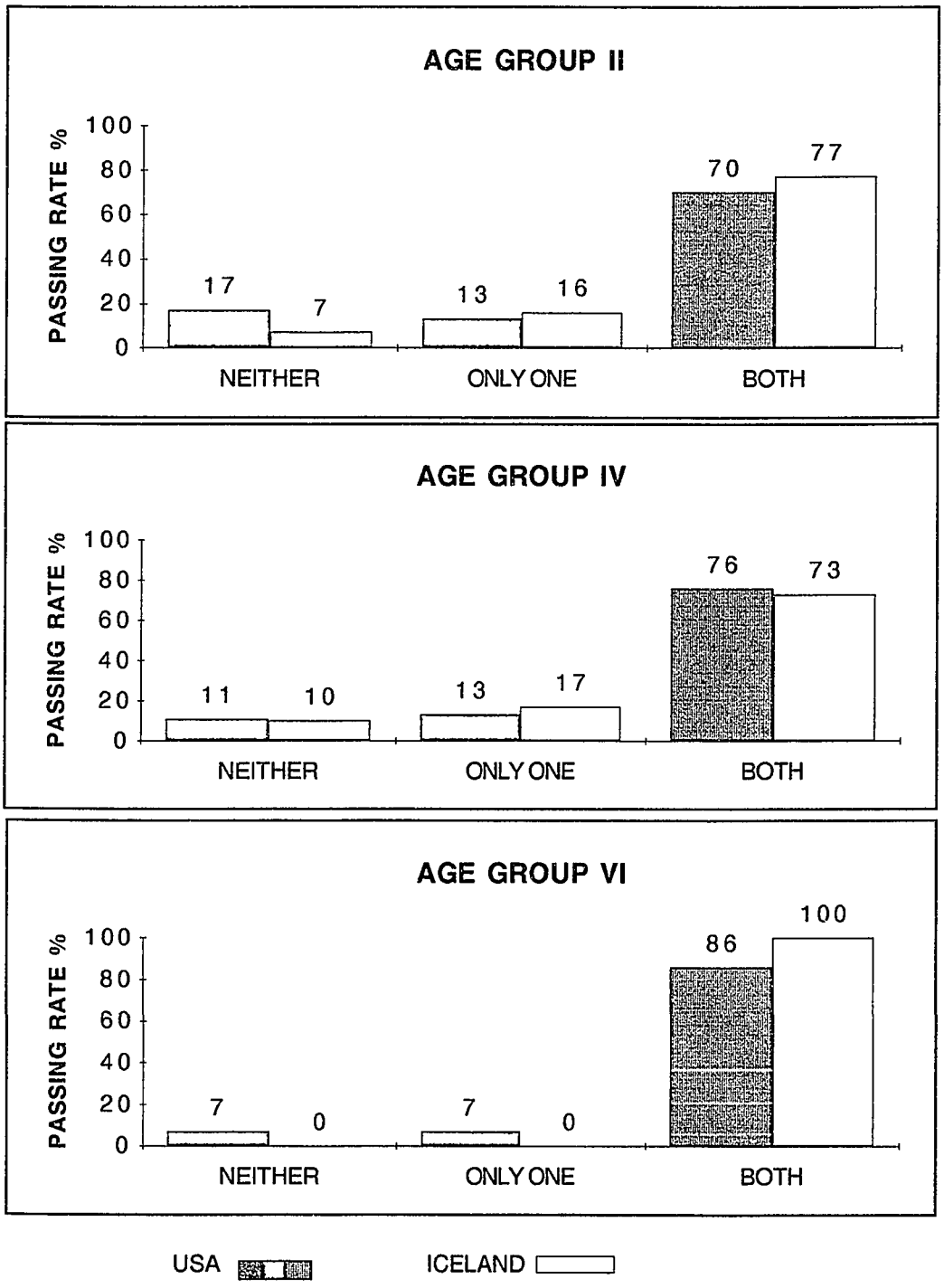
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 7. Object Memory.



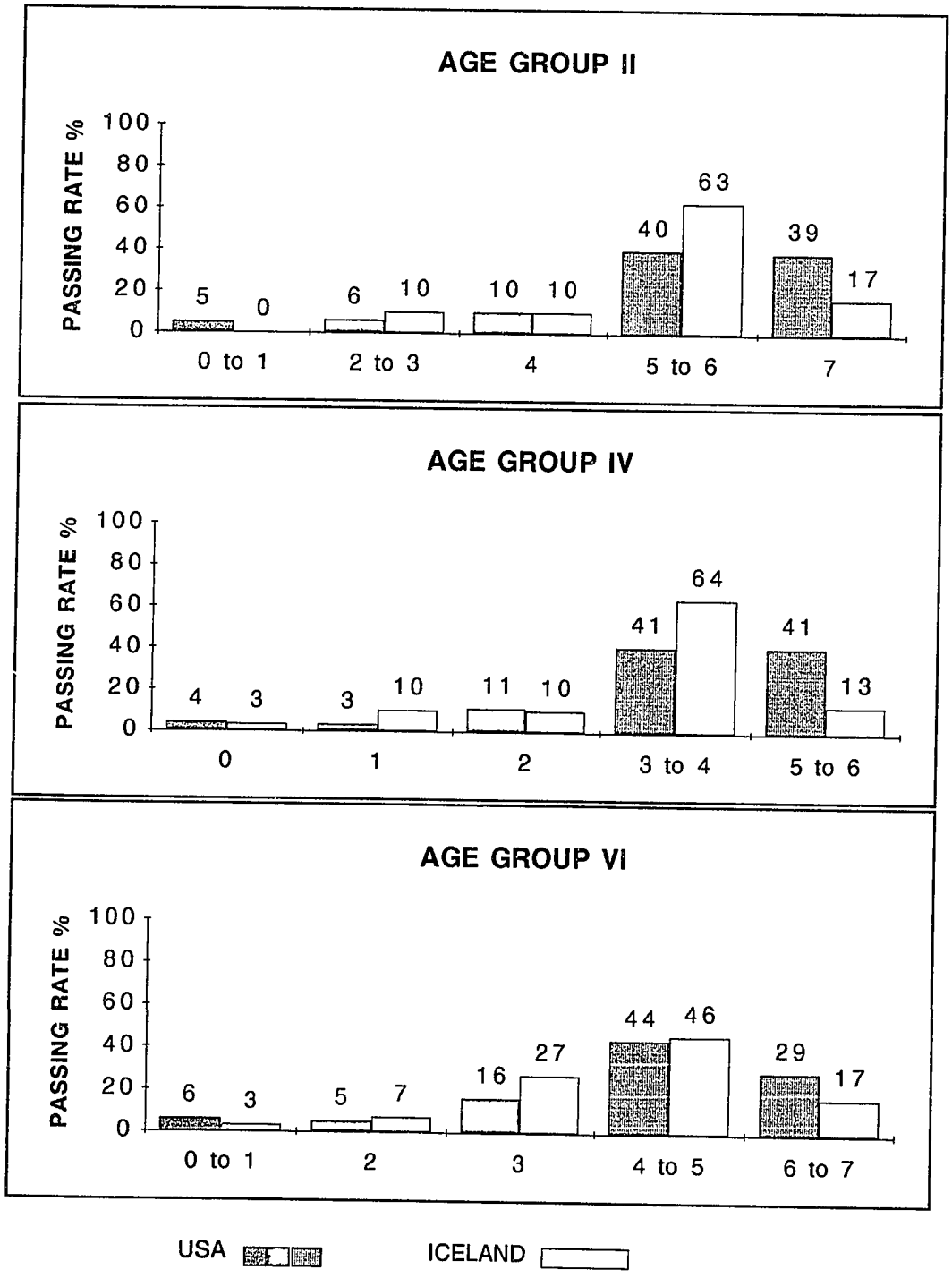
Note. The text below the bar graphs indicates subtest raw scores.

Figure 8. Puzzles.



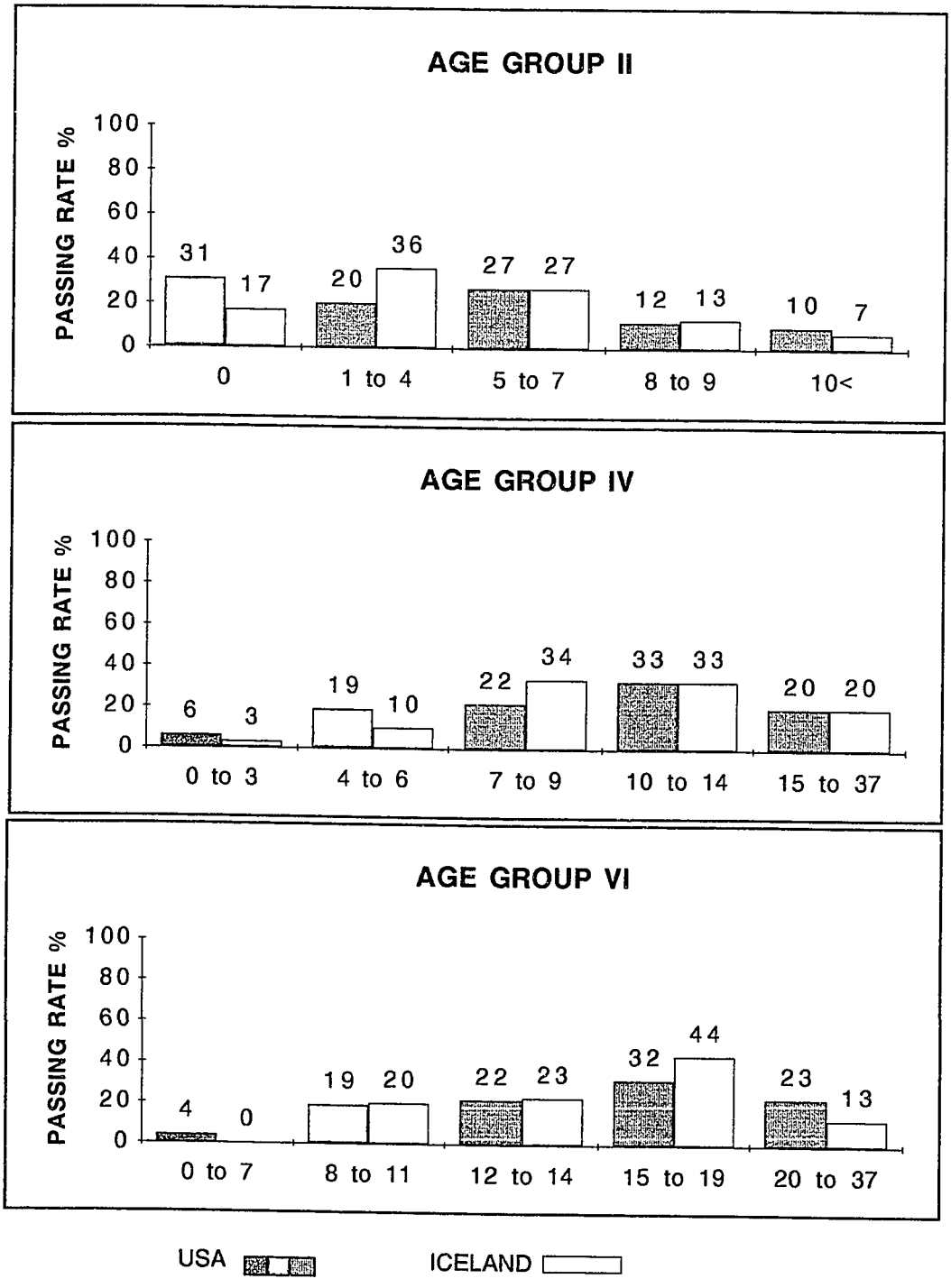
Note. The text below the bar graphs indicates subtest raw scores.

Figure 9. Figure-Ground.



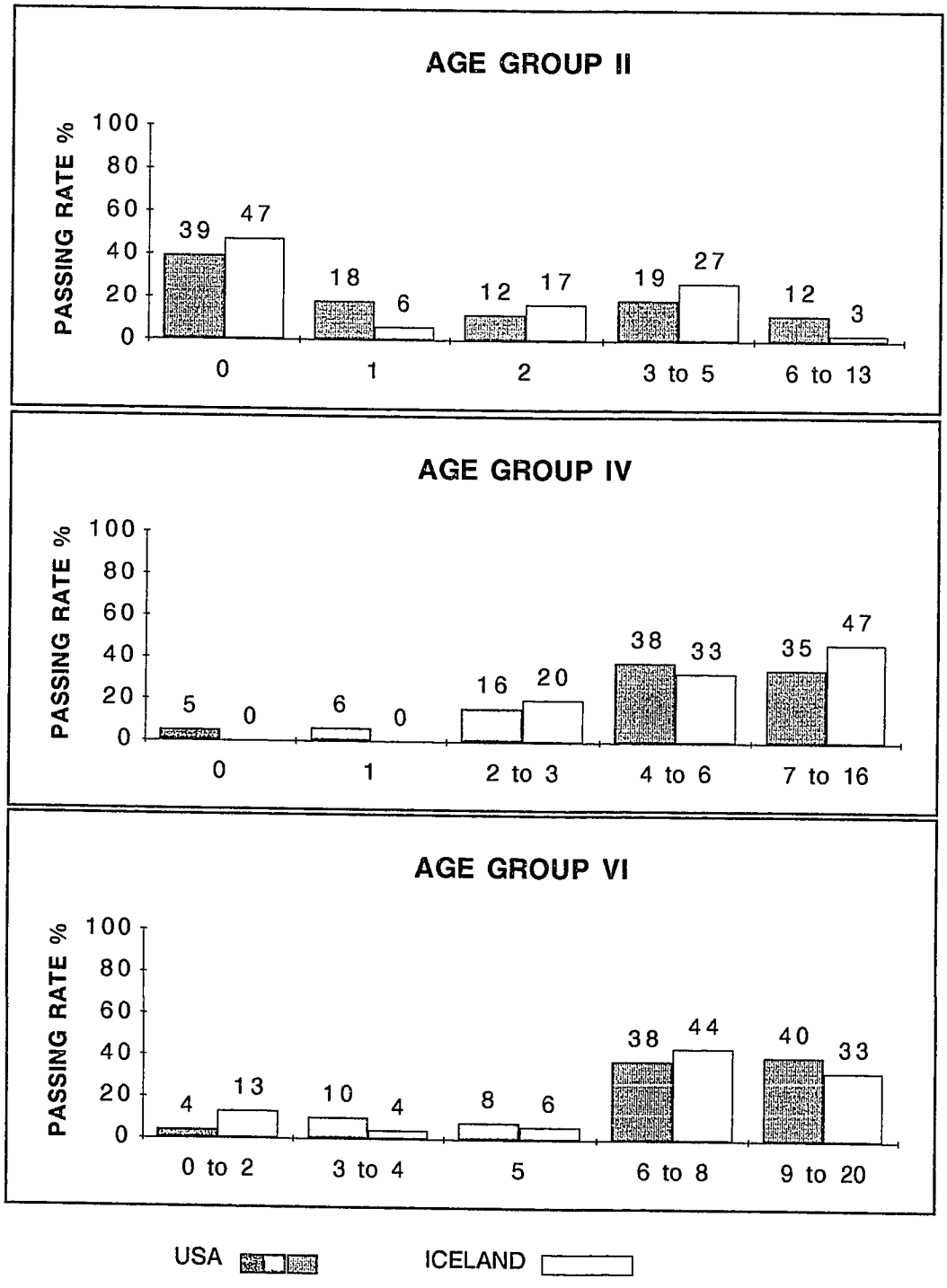
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 10. Draw-a-Person.



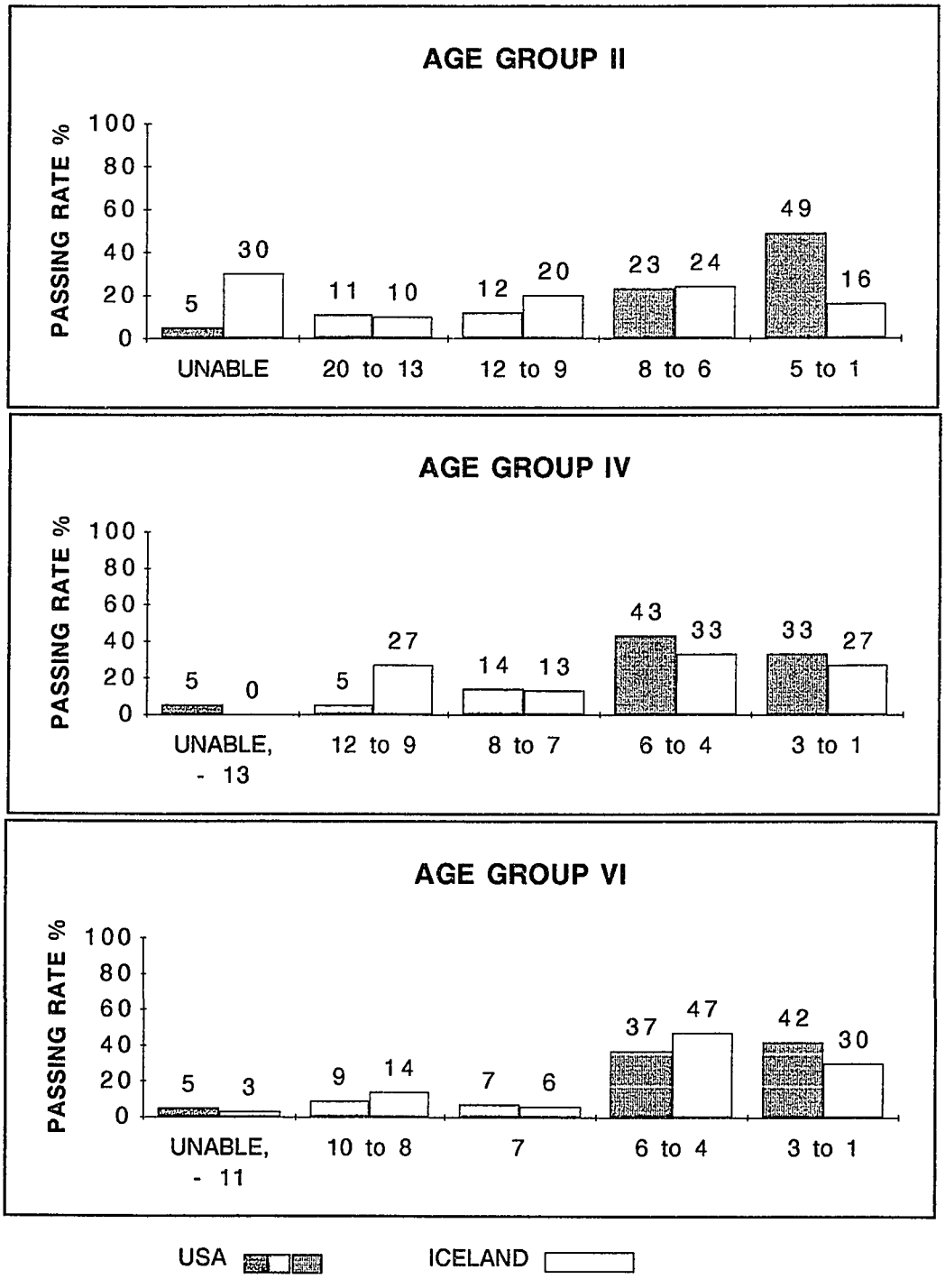
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 11. Motor Accuracy.



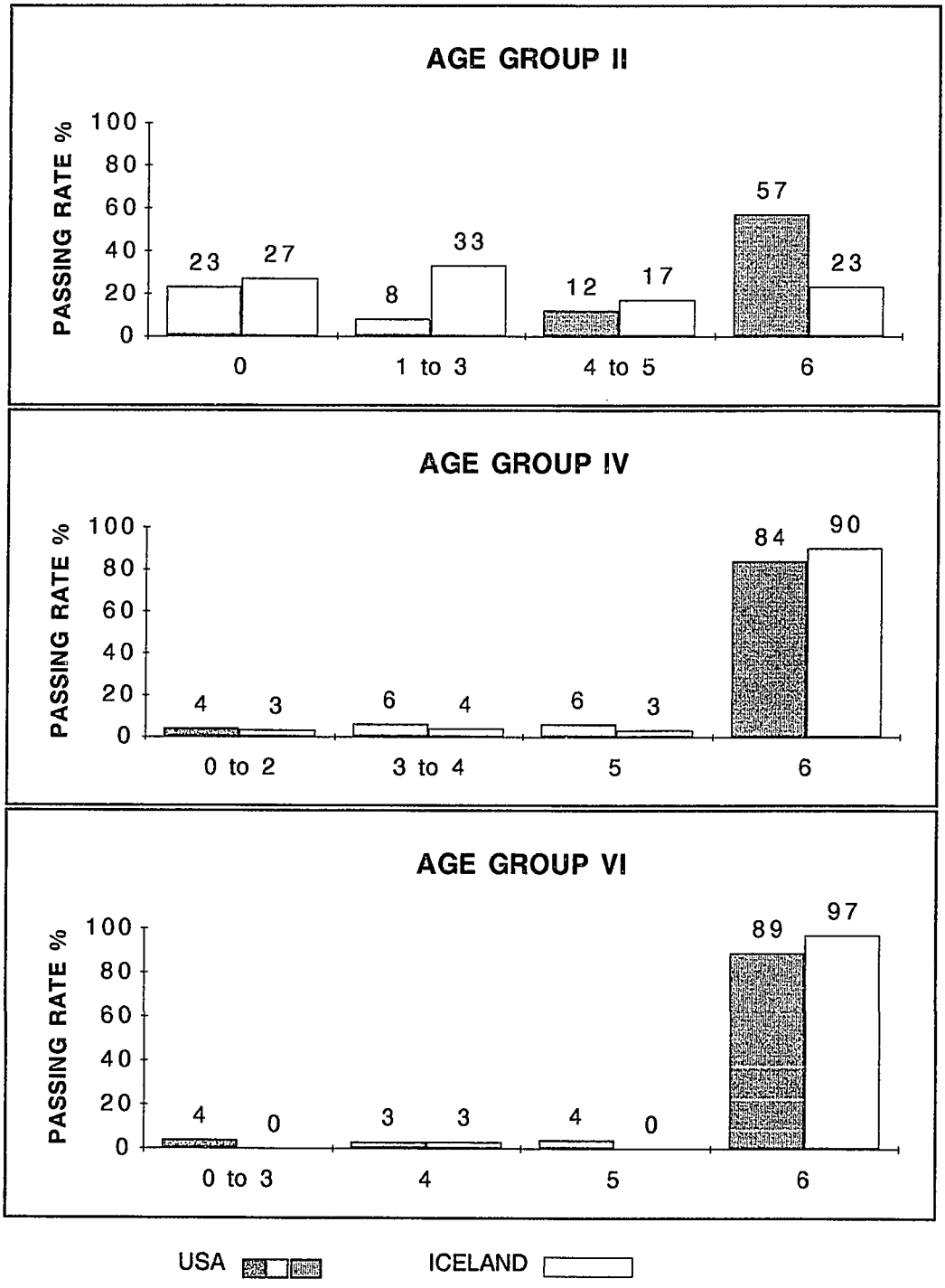
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 12. Vertical Writing.



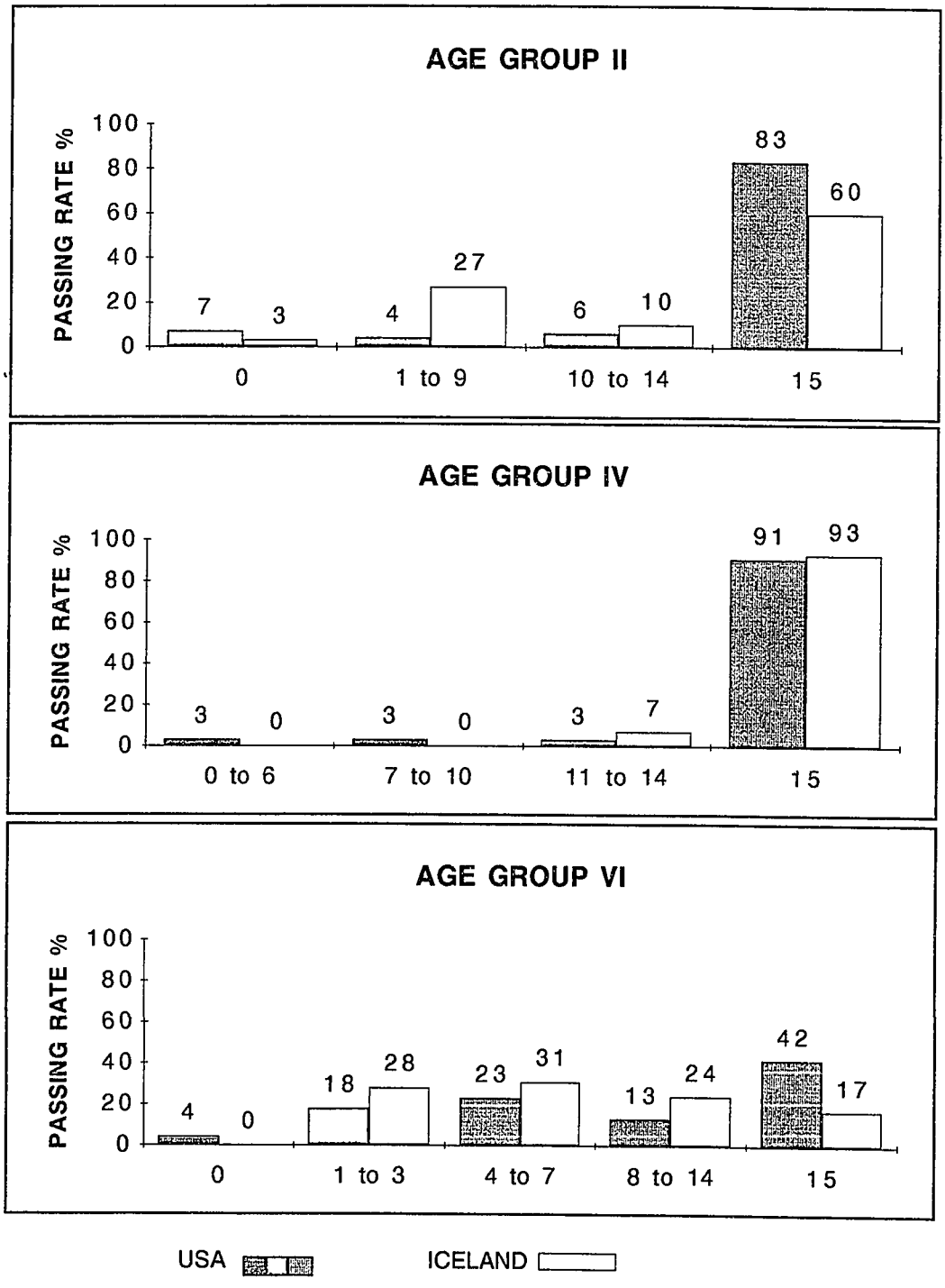
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 13. Hand-to-Nose.



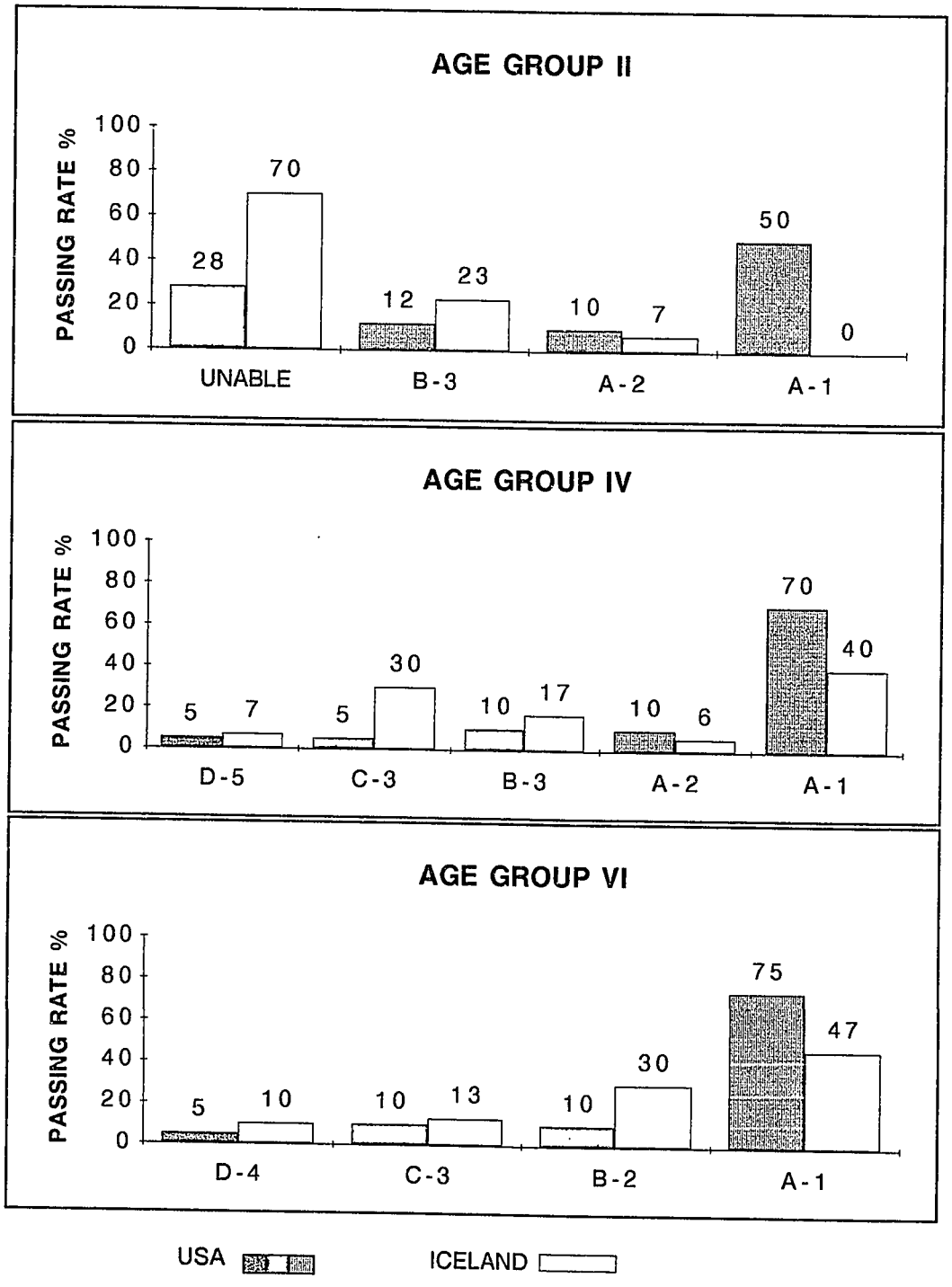
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 14. Romberg.



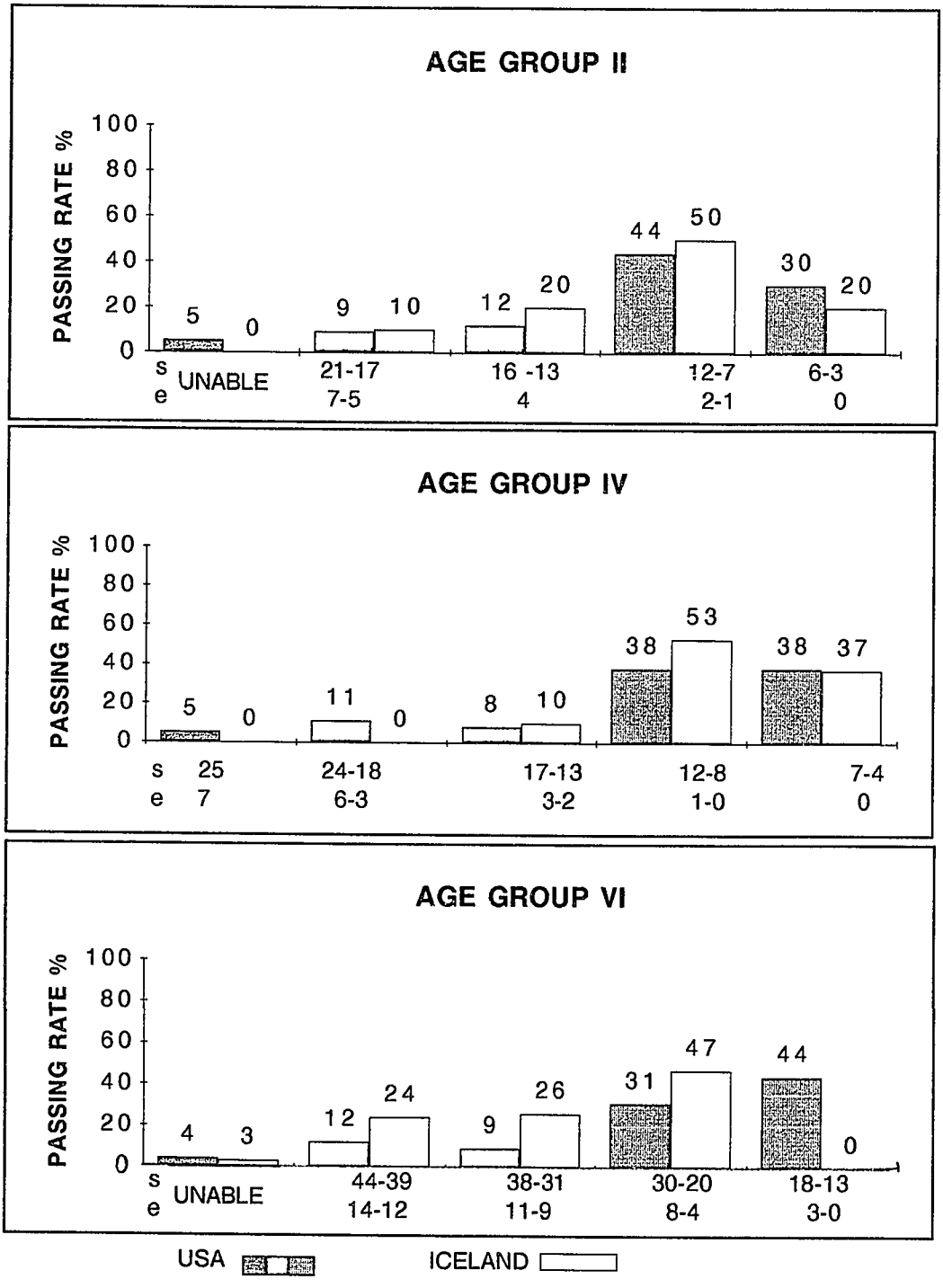
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 15. Stepping.



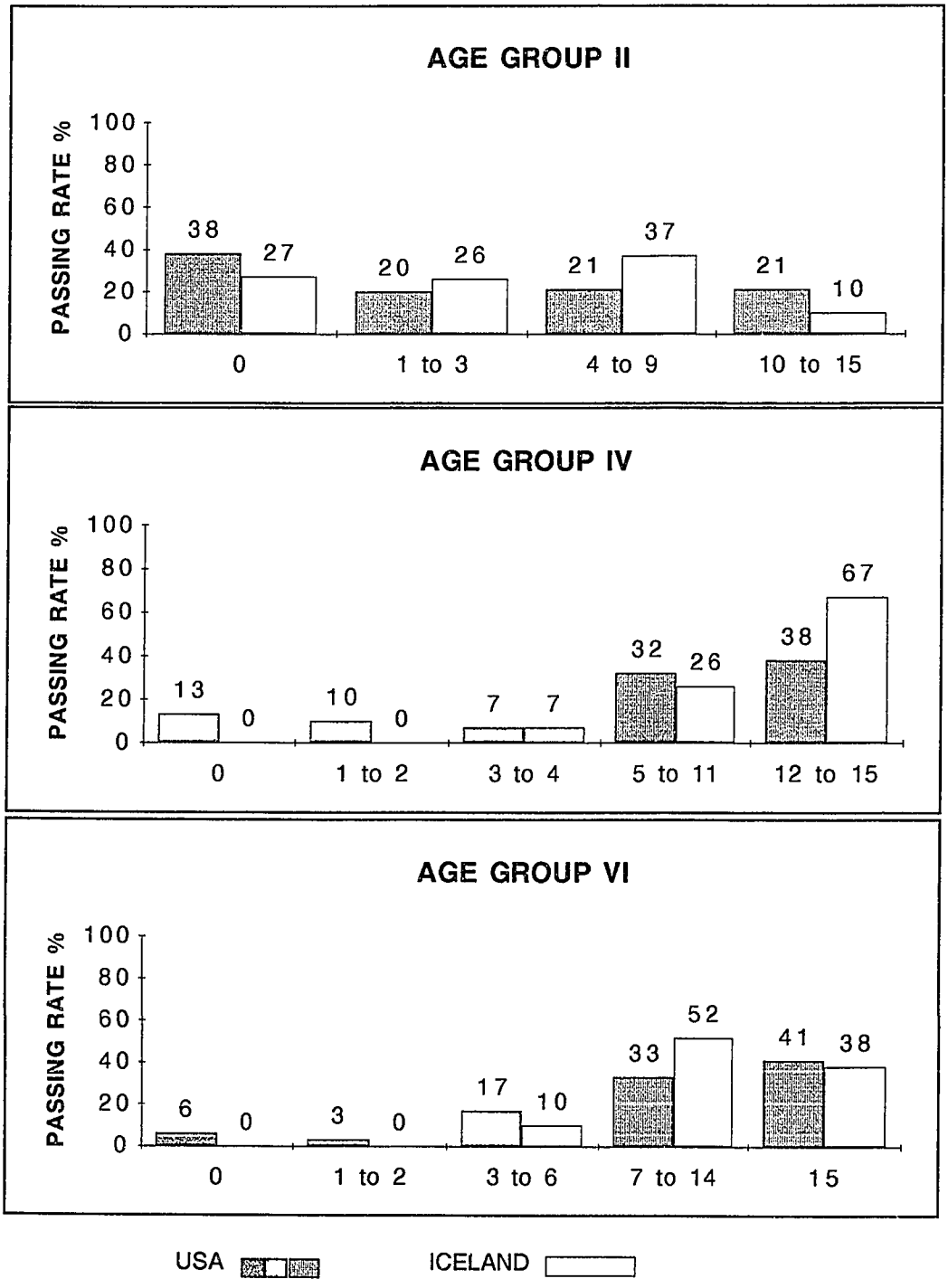
Note. The text below the bar graphs indicates subtest raw scores.

Figure 16. Walks Line.



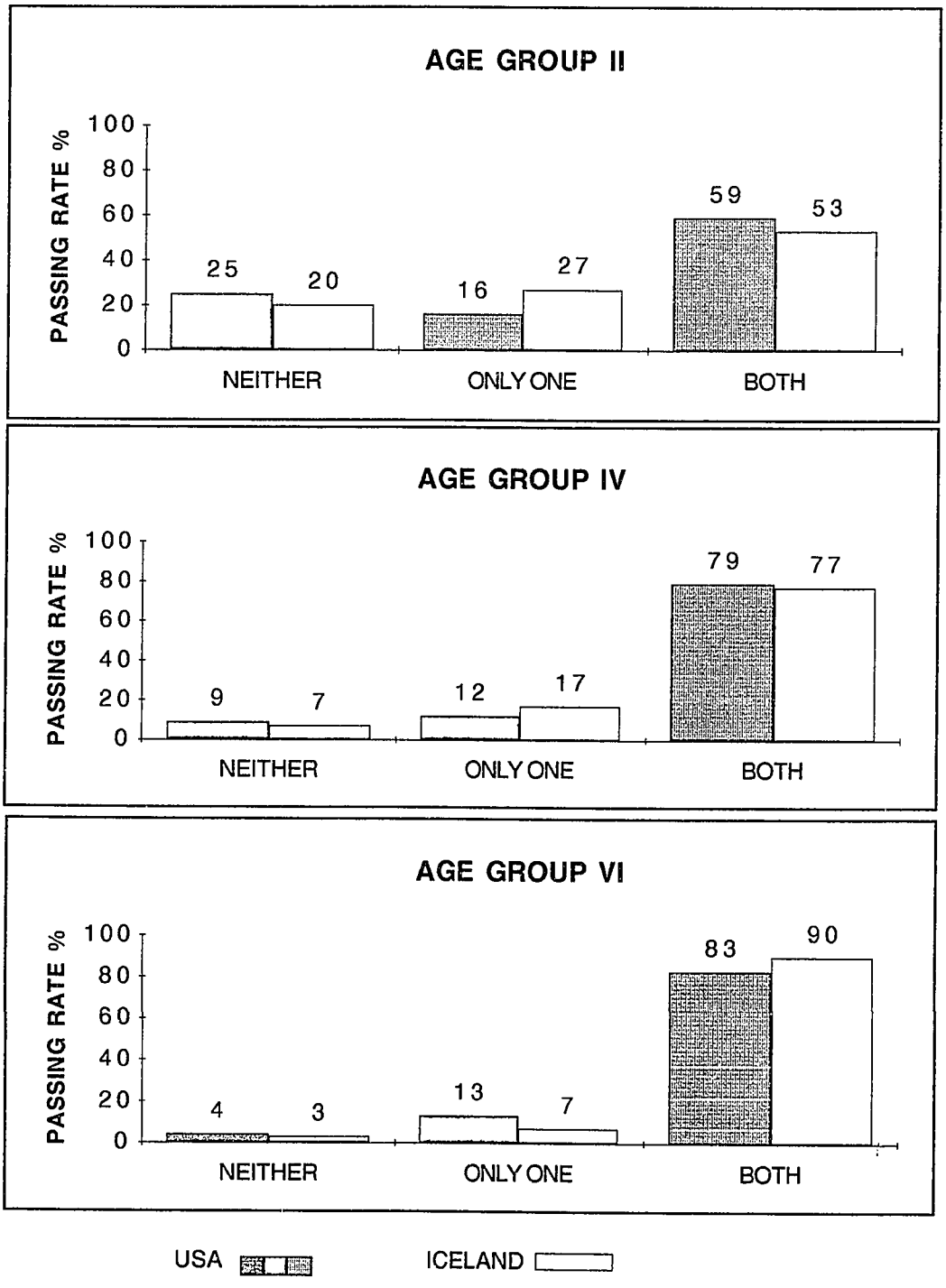
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 17. Supine Flexion.



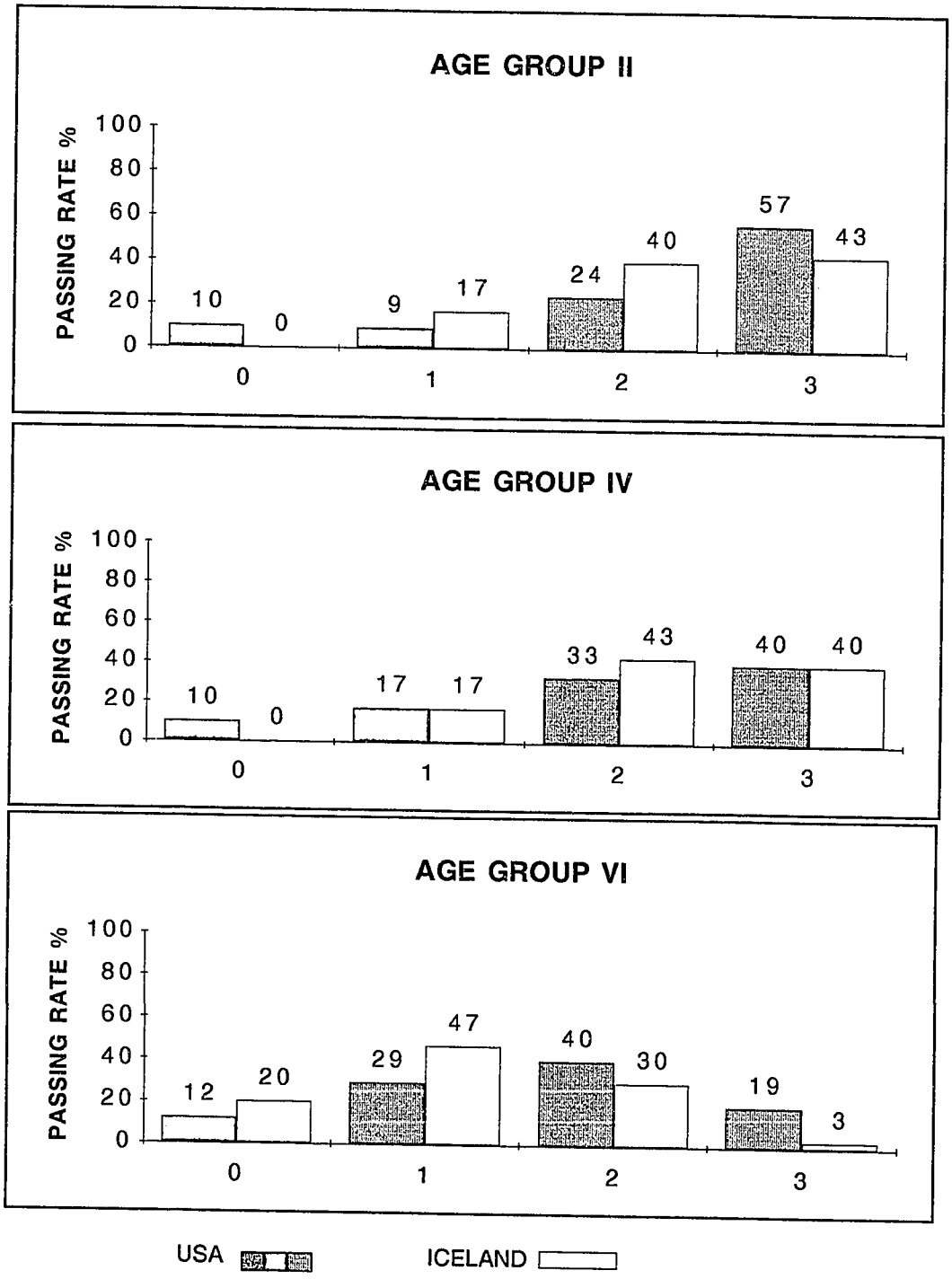
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 18. Kneel-Stand.



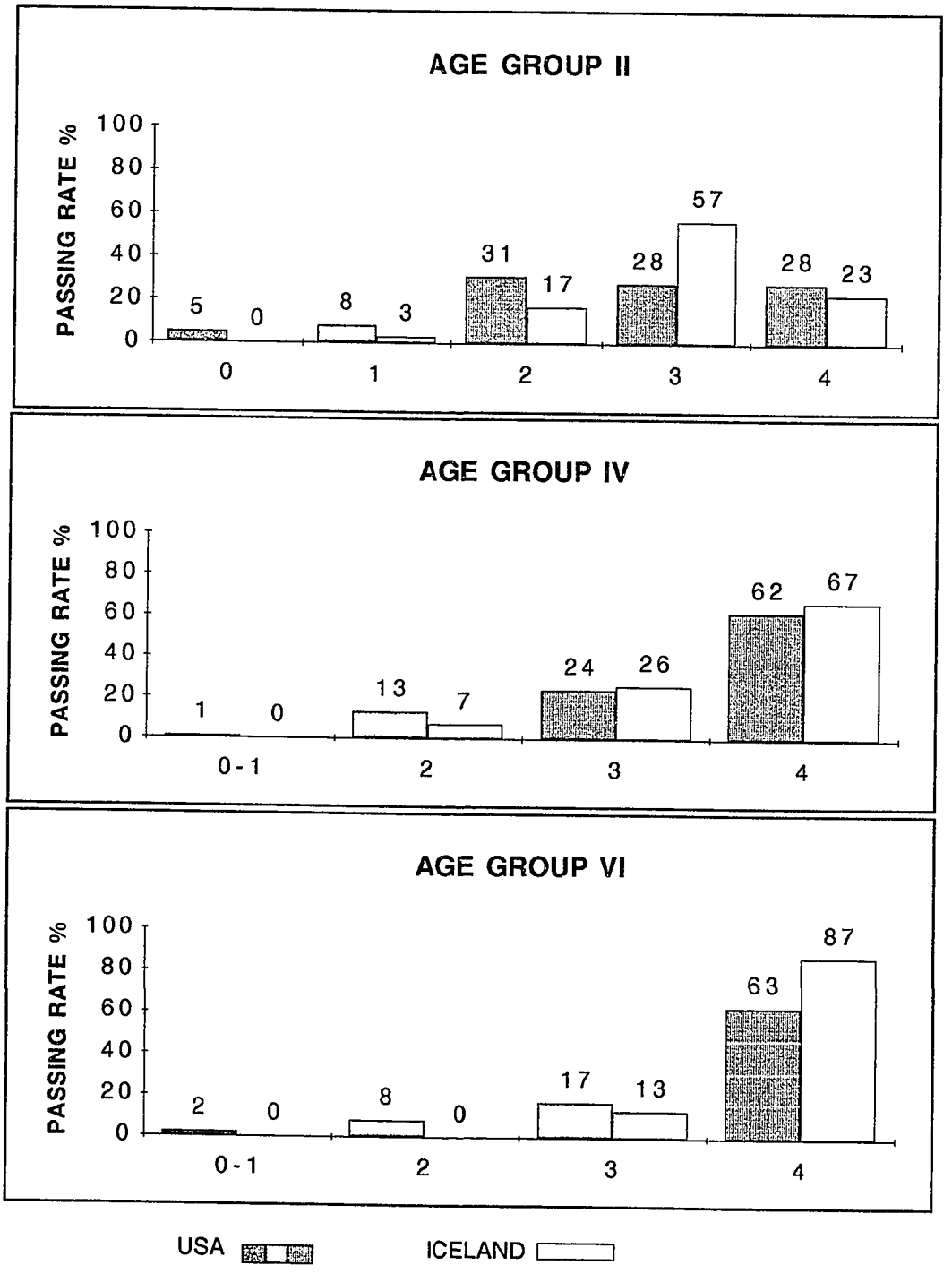
Note. The text below the bar graphs indicates subtest raw scores.

Figure 19. Imitation of Postures.



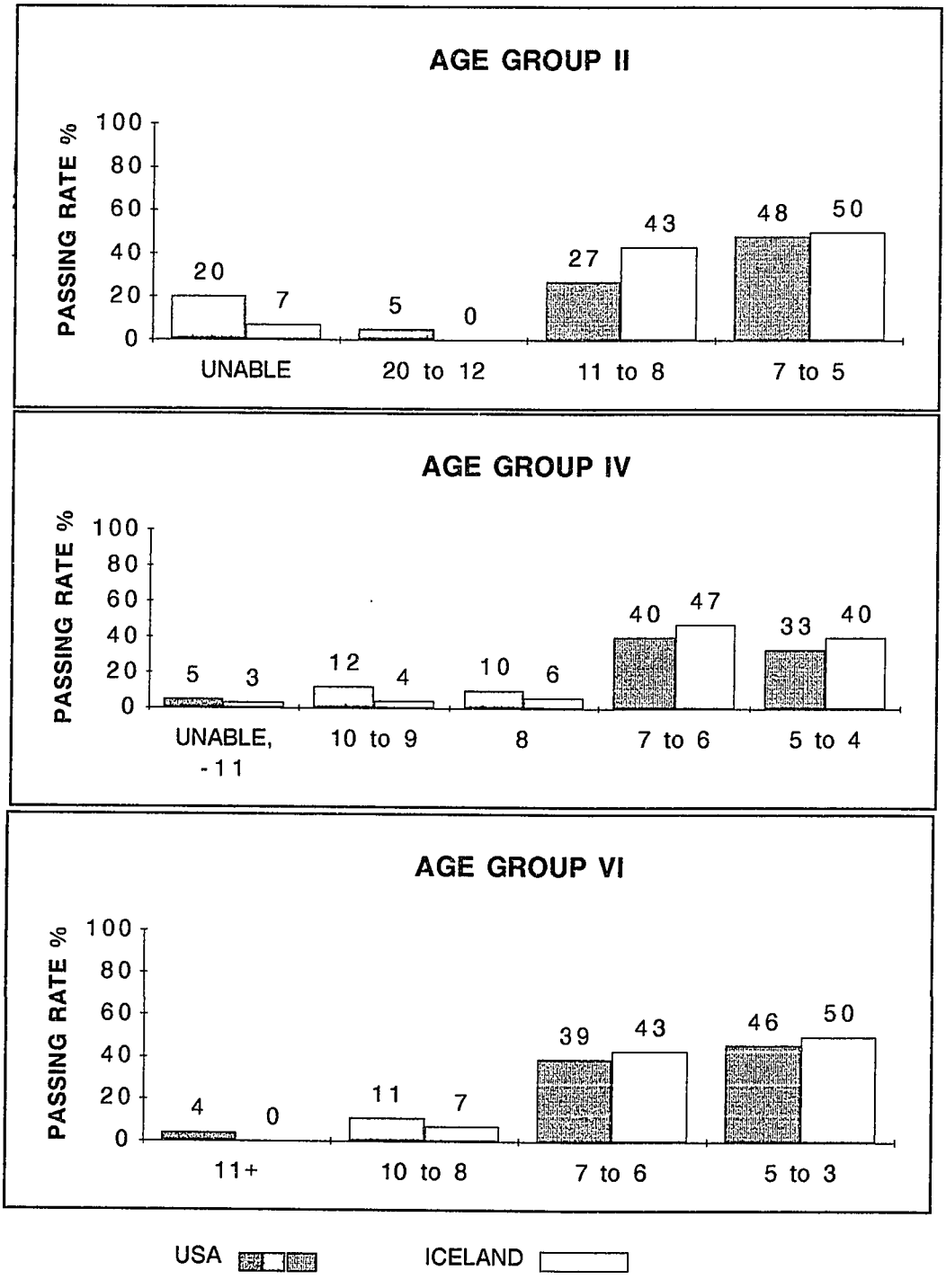
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 20. Tongue Movements.



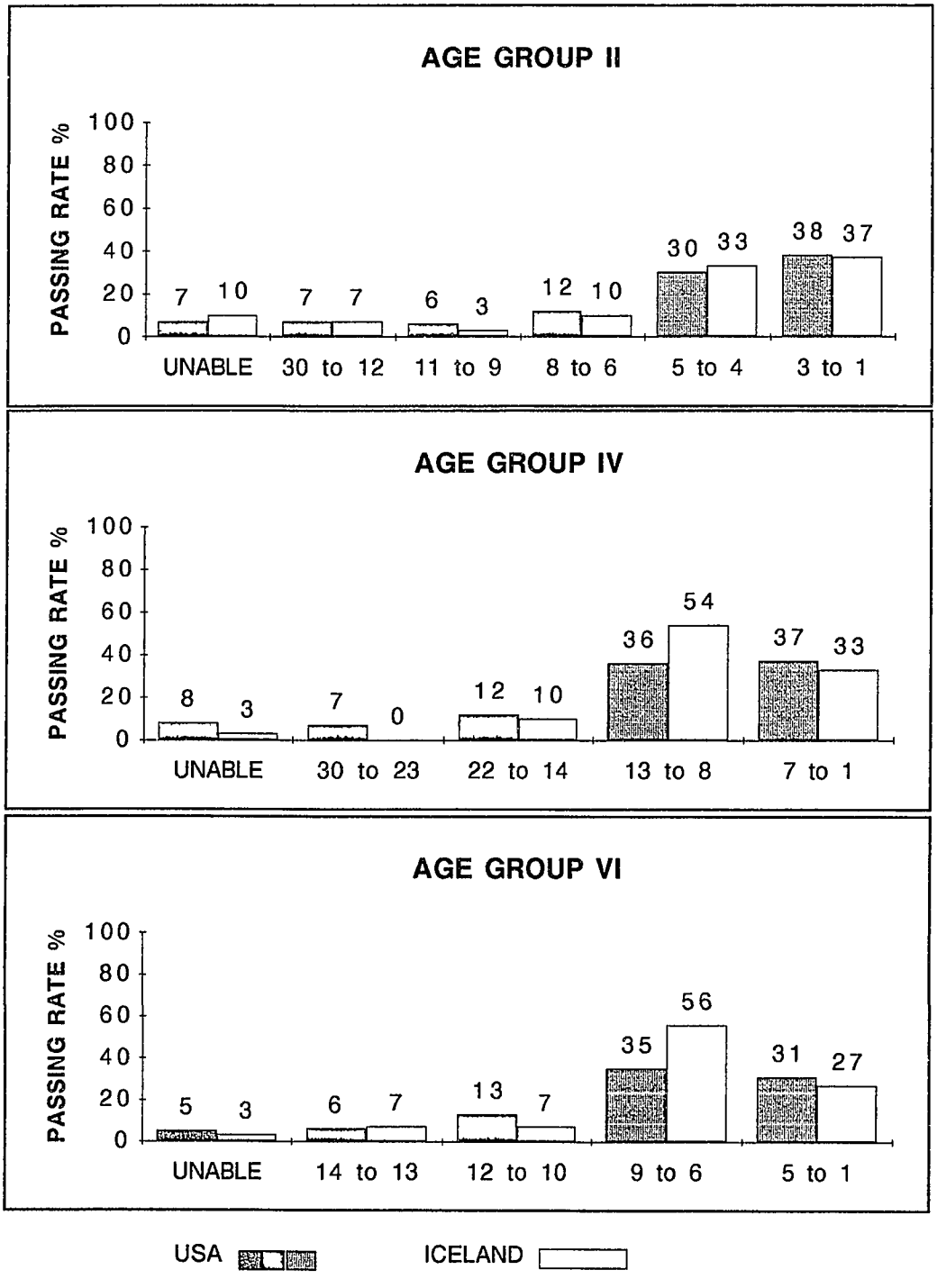
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 21. Rapid Alternating Movements.



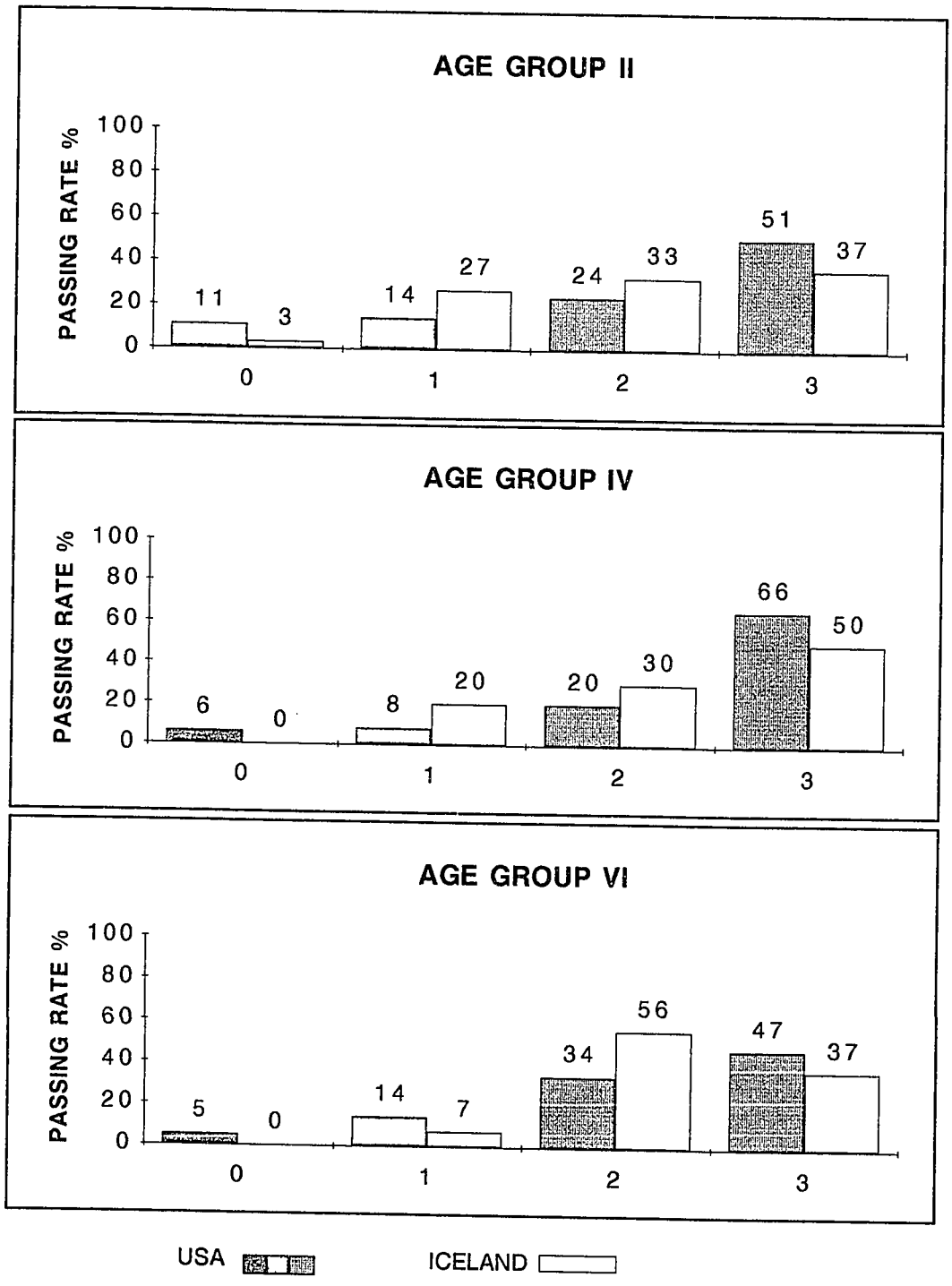
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 22. Maze.



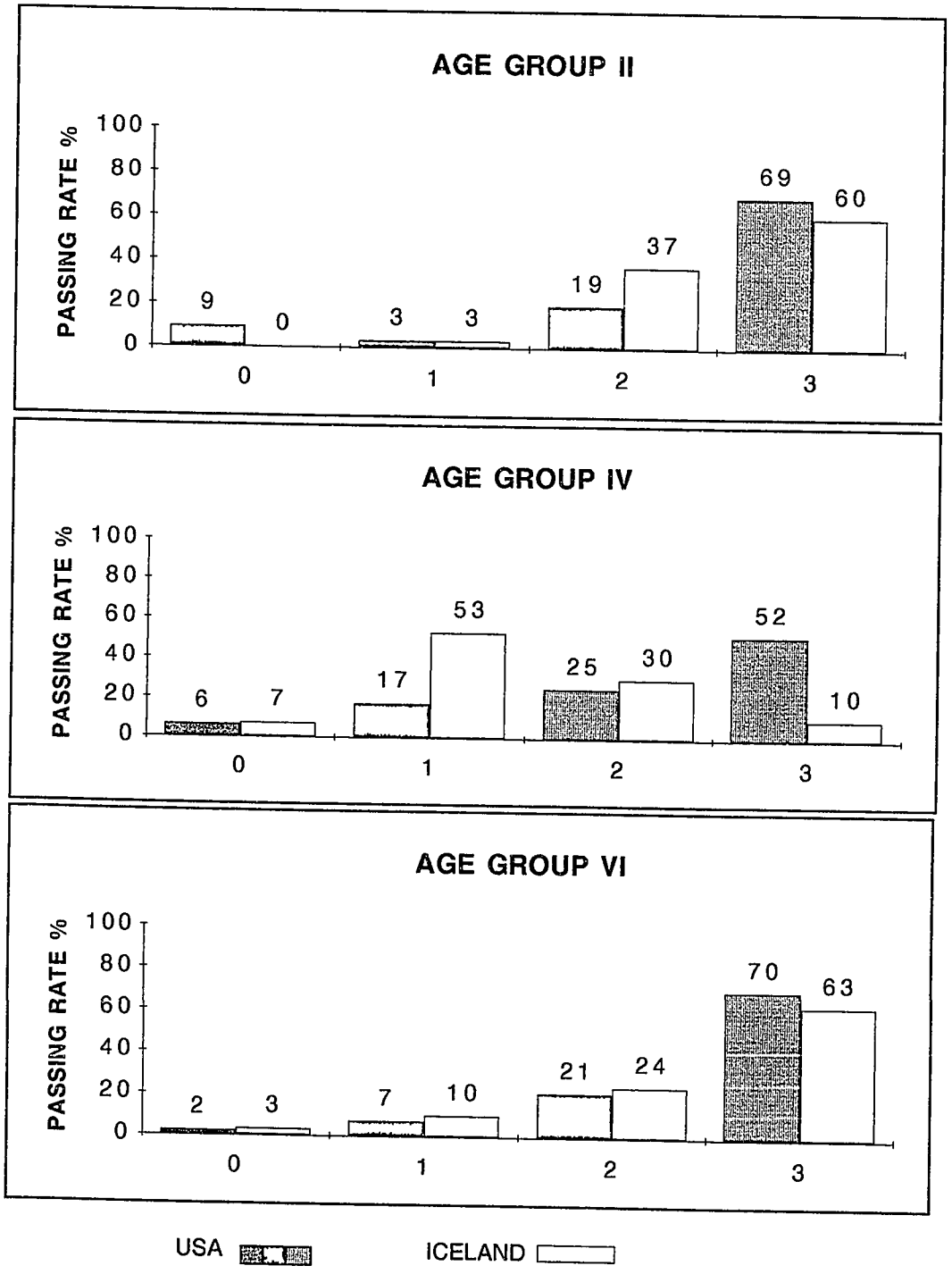
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 23. General Information.



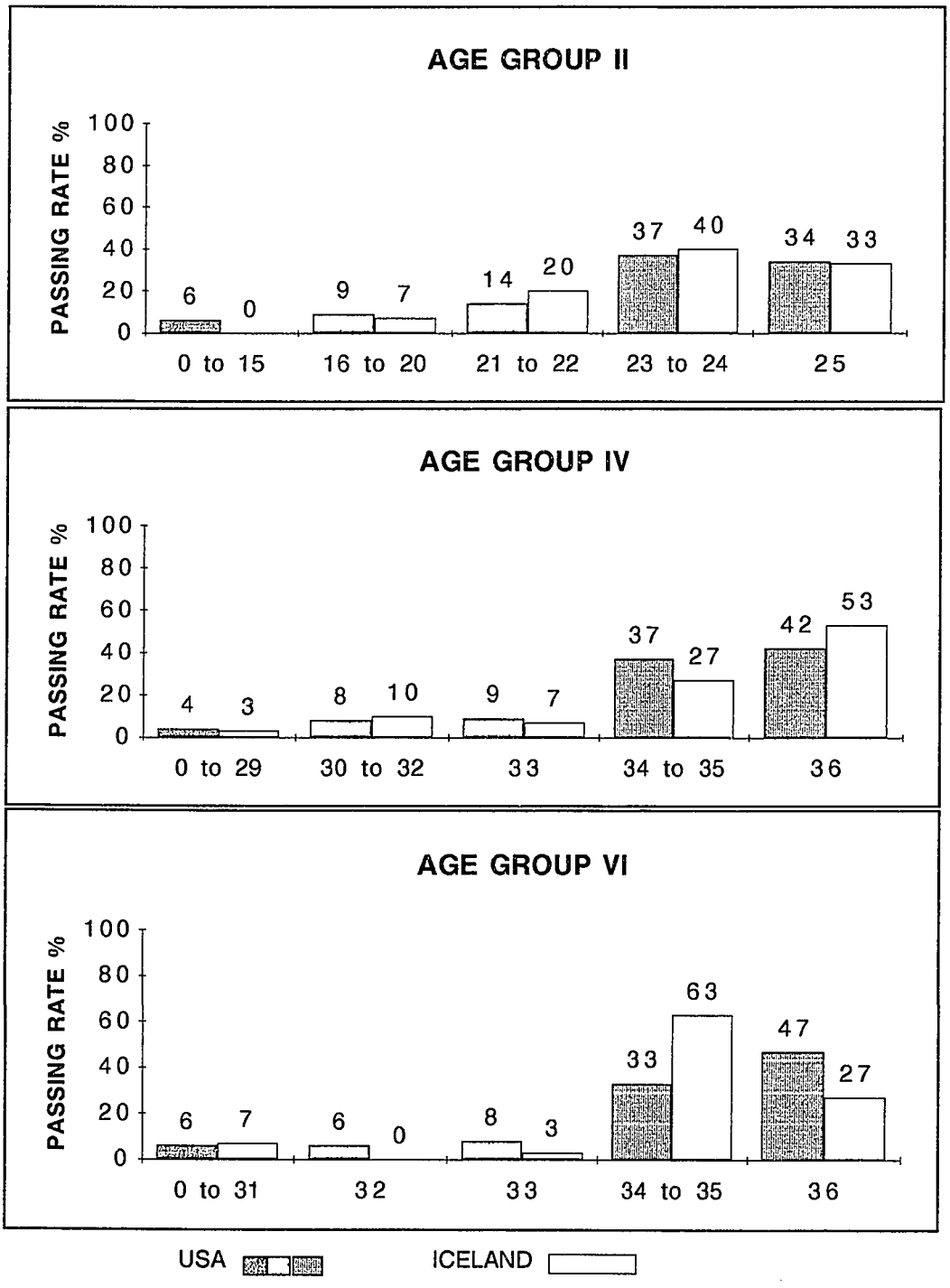
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 24. Follow Directions. 60



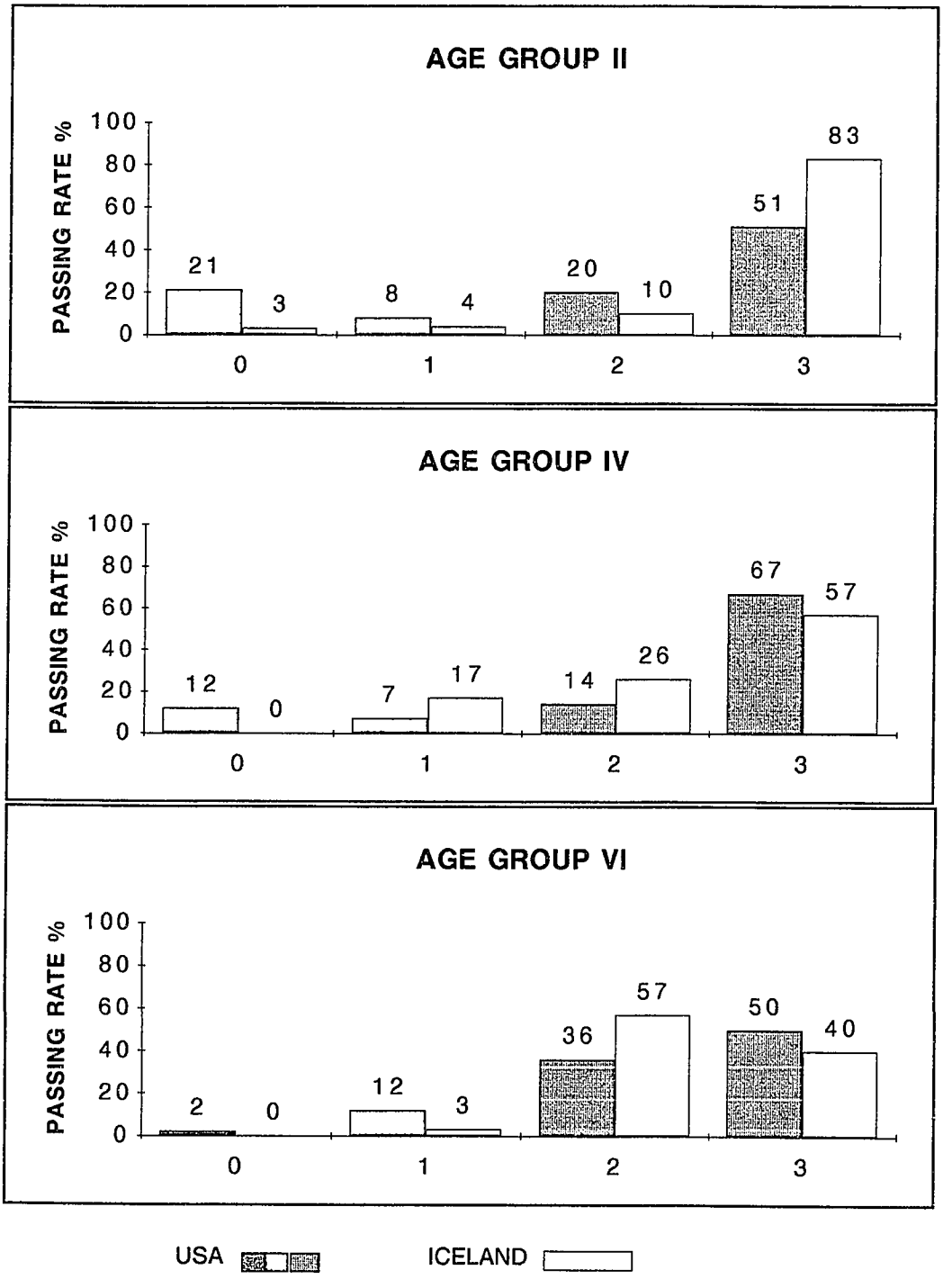
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 25. Articulation.



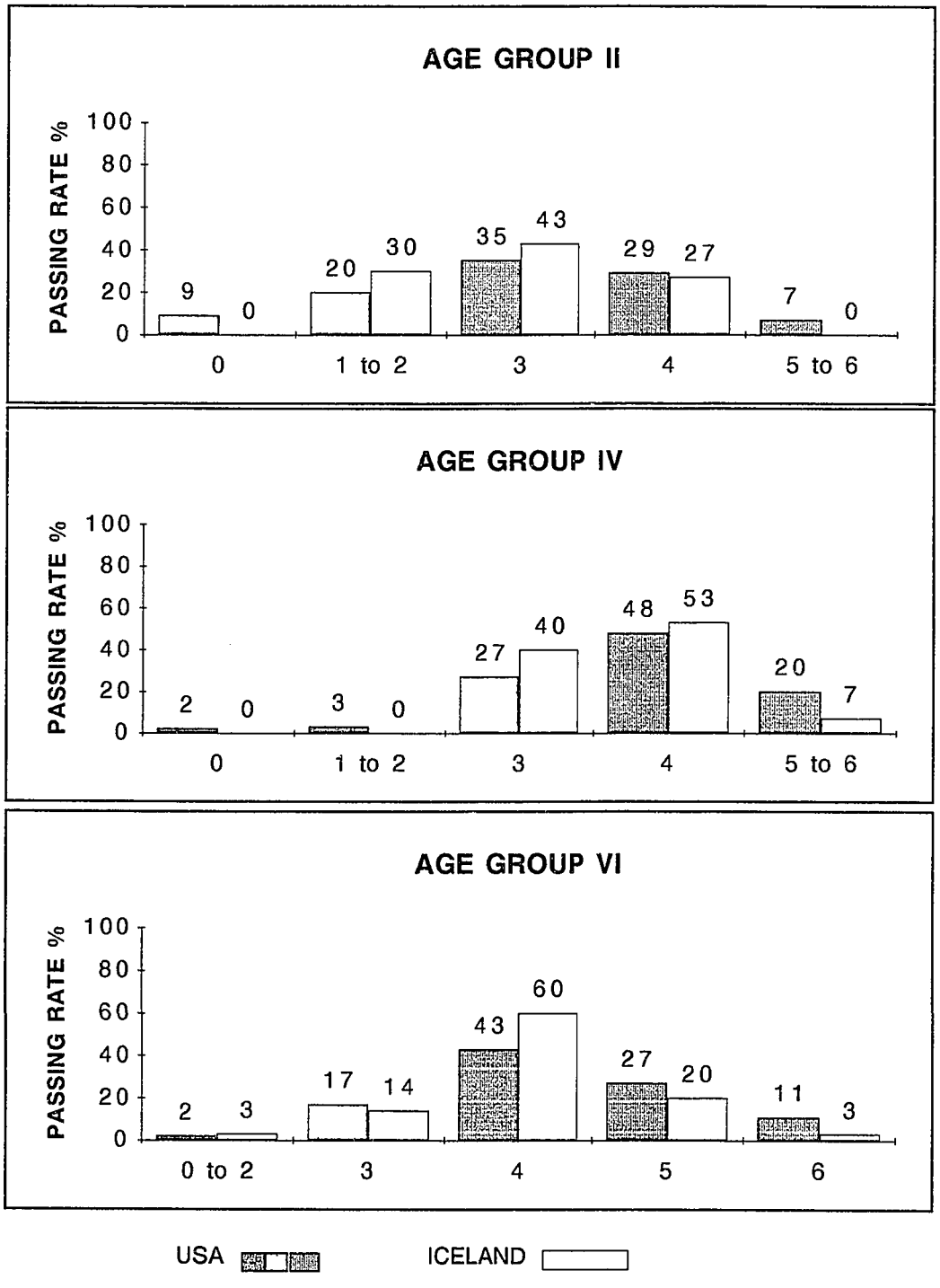
Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 26. Sentence Repetition.



Note. The numbers below the bar graphs indicate subtest raw scores.

Figure 27. Digit Repetition.



Note. The numbers below the bar graphs indicate subtest raw scores.

several of the subtests there are minimal differences between the two samples in one or two of the age groups, but noticeable differences at other age levels.

The findings are presented as performance across age groups and across performance indices in terms of noticeable differences in subtest performance between Icelandic and U.S. children on the MAP. Noticeable difference was defined as patterns and trends that emerged to differentiate the two samples. Better performance was defined as obtainment of higher score. The analysis focused on the percentages of Icelandic children classified as "at risk" compared to percentages of U.S. children.

Performance across Age Groups

Age Group II

Noticeable differences were found between the Icelandic and U.S. samples on 10 of the subtests. No or minimal differences were obtained on 17 subtests. On five of the subtests, the U.S. children performed better than the Icelandic sample. These subtests are: Block Designs (Figure 3), Vertical Writing (Figure 12), Hand-to-Nose (Figure 13), Romberg (Figure 14), and Stepping (Figure 15). On five other subtests, the Icelandic children performed better. These are the subtests: Tower (Figure 1), Draw-a-Person (Figure 10), Tongue Movements (Figure 13), Rapid Alternating

Movements (Figure 21), and Sentence Repetition (Figure 26).

Age Group IV

Noticeable differences between the two samples were found on 14 of the subtests. No or minimal differences were obtained on 13 of the subtests. On four of the subtests, the U.S. children performed better than the Icelandic sample. These subtests are: Block Designs (Figure 3), Vertical Writing (Figure 12), Stepping (Figure 15) and Follow Directions (Figure 24). On 10 subtests, the Icelandic children performed better. These are the subtests: Sequencing (Figure 2), Block Tapping (Figure 4), Finger Localization (Figure 6), Draw-a-Person (Figure 10), Motor Accuracy (Figure 11), Walks Line (Figure 16), Supine Flexion (Figure 17), Imitation of Postures (Figure 19), Rapid Alternating Movements (Figure 21), and Maze (Figure 22).

Age Group VI

Noticeable differences were found between the two samples on 15 of the 27 subtests, whereas no or minimal differences were obtained on 12 subtests. On four of the subtests, the U.S. children performed better than the Icelandic sample. These subtests are: Block Designs (Figure 3), Motor Accuracy (Figure 11), Stepping (Figure 15), and Walks Line (Figure

16). On 11 subtests, the Icelandic children performed better. These are the subtests: Sequencing (Figure 2), Block Tapping (Figure 4), Stereognosis (Figure 5), Finger Localization (Figure 6), Puzzles (Figure 8), Hand-to-Nose (Figure 13), Supine Flexion (Figure 17), Tongue Movements (Figure 20), Rapid Alternating Movements, (Figure 21), General Information, (Figure 14), and Sentence Repetition (Figure 26).

Performance across Indices

Foundations Index

On the Foundations Index, no differences were observed between the two samples on the subtest Kneel-Stand in any of the age groups. On subtest Rapid Alternating Movements, the Icelandic sample performed noticeably better in all age groups, and on Stepping the U.S. children performed better across the three age groups. The Icelandic children in age group II scored at a lower level than their U.S. counterparts on some of the subtests in this Index. Noticeable differences were shown in age group II on the subtests Vertical Writing, Hand-to-Nose, and Romberg, and substantial differences were demonstrated on the subtest Stepping, as displayed in Figure 15. A high percentage of the children in age group II were unable to keep their eyes closed for the twenty second interval required, and some of the older children as well. The Icelandic children in

age group IV performed better on Walks Line, while the opposite was found for age group VI, as the Icelandic children could not adhere to both the time limit and the accuracy (number of errors) required. Icelandic children in age groups IV and VI performed better on Supine Flexion and Finger Localization. Icelandic age group VI performed better on Stereognosis and Hand-to-Nose.

In summary, in age group II minimal differences were obtained on five subtests, the U.S. sample performed better on four subtests, and the Icelandic sample performed better on one subtest. In age group IV, minimal differences were found on four subtests, the Icelandic children performed better on four subtests, and the U.S. children performed better on two subtests. In age group VI, minimal differences were demonstrated on three subtests, on two of the subtests the U.S. sample performed better, and on the five remaining subtests the Icelandic sample performed better.

Coordination Index

The subtests, Rapid Alternating Movements, Walks Line, and Vertical Writing are included in two Indices, the Coordination and the Foundations Indices, and the results for these three subtests were described above. No differences were found on Articulation across the

three age groups, although the performance of the Icelandic sample was slightly better in age groups II and VI. The Icelandic sample performed better on Tongue Movements in age groups II and VI, and the same trend was observed for age group IV. Age group II of the Icelandic sample performed better on Tower. On Motor Accuracy, the Icelandic children in age group IV performed better, but in age group VI the U.S. children performed better.

In summary, in age group II no or minimal differences were shown on three subtests. The U.S. sample performed better on one subtest, and the Icelandic sample performed better on three subtests. In age group IV no or minimal differences were found on three subtests, the U.S. sample performed better on one subtest, and the Icelandic sample performed better on three subtests. In age group VI, no or minimal differences were found on three subtests, the U.S. sample performed better on two subtests, and the Icelandic sample performed better on two subtests.

Verbal Index

On the Verbal Index, no differences were found between the two samples on Digit Repetition in any of the age groups. In Sentence Repetition, the performance of age groups II and VI was noticeably better among the Icelandic children than among the U.S. children. Age group VI

of Icelandic children performed better on General Information, but minimal differences were found among the two other age groups. On Follow Directions age group IV of the U.S. children performed substantially better than the Icelandic children in the same age group, but no differences were found in age group II and VI.

In summary, in age group II no or minimal differences were obtained on three subtests, and the Icelandic sample performed better on one subtest. In age group IV, no or minimal differences were found on three of the subtests, and on one subtest the U.S. sample performed better. In age group VI, no or minimal differences were found on two subtests, and the Icelandic sample performed better on two subtests.

Non-Verbal Index

On the Non-Verbal Index, no differences were found between the two samples on Object Memory and Figure-Ground. The Icelandic children in age groups IV and VI performed better than the U.S. children on Sequencing and Block Tapping. In Puzzles, the Icelandic children in age group VI performed better, and all the Icelandic children accomplished both the tasks required.

In summary, no differences were found between the two samples in age group II. In age group IV, the Icelandic children performed better on

two subtests, and minimal differences were found on three subtests. In age group VI, the Icelandic children performed better on three out of five subtests, while minimal differences were found on two subtests.

Complex-Tasks Index

The U.S. children performed better than the Icelandic children in all age groups on Block Designs. In Draw-a-Person, the Icelandic children performed better in age groups II and IV. In Imitation of Postures, the performance of age group II and VI was similar in both samples, but the Icelandic children performed better in age group IV. In Maze, the Icelandic children in age group IV performed better, while minimal differences were found among the remaining age groups.

In summary, in age group II no or minimal differences were obtained on two subtests. The U.S. sample performed better on one subtest, and the Icelandic sample performed better on one subtest. In age group IV differences were obtained on all four subtests, the U.S. children performed better on one subtest, and the Icelandic children performed better on three subtests. In age group VI no or minimal differences were found on three subtests, and on one subtest the U.S. sample performed better.

Question

The question to be answered in this study was: Are there noticeable differences in subtest performance between Icelandic and U.S. children on the Miller Assessment for Preschoolers? The findings of the study indicate that there are noticeable differences in performance between the two samples on several of the subtests. In age group II, there are noticeable differences on 10 of the subtests (see Table 6). In age group IV, there are noticeable differences on 14 of the subtests (see Table 7). In age group VI, there are noticeable differences on 15 of the subtests (see Table 8). Table 9 summarizes the overall findings of the study.

Conclusion

On three subtests, differences were found across all age groups. These are Block Designs, Stepping, and Rapid Alternating Movements. On 19 subtests noticeable differences in performance were found in one or two of the age groups. No differences were found between the two samples on five of the subtests. These are Object Memory, Figure-Ground, Kneel-Stand, Articulation, and Digit Repetition. In general, more differences were obtained in subtest performance among the two older age groups of Icelandic and U.S. children than among the youngest age group. On the majority of the subtests where differences were obtained the Icelandic

Table 6

Comparison of the performance of Icelandic and U.S. children in age group II on the 27 subtests of the MAP

	Foundations Index	Coordination Index	Verbal Index	Non-Verbal Index	Complex Tasks Index
Tower		X I			
Sequencing				O	
Block Designs					X U.S.
Block Tapping				O	
Stereognosis	O				
Finger Localization	O				
Object Memory				O	
Puzzles				O	
Figure-Ground				O	
Draw A Person					X I
Motor Accuracy		O			
Vertical Writing	X U.S.	X U.S.			
Hand to Nose	X U.S.				
Romberg	X U.S.				
Stepping	X U.S.				
Walks Line	O	O			
Supine Flexion	O				
Kneel-Stand	O				
Imitation of Postures					O
Tongue Movements		X I			
Rapid Alt. Movements	X I	X I			
Maze					O
General Information			O		
Follow Directions			O		
Articulation		O			
Sentence Repetition			X I		
Digit Repetition			O		

Note. Minimal differences = 0, Iceland higher = X I, U.S. higher = X U.S.

Table 7

Comparison of the performance of Icelandic and U.S. children in age group IV on the 27 subtests of the MAP

	Foundations Index	Coordination Index	Verbal Index	Non-Verbal Index	Complex Tasks Index
Tower		O			
Sequencing				X I	
Block Designs					X U.S.
Block Tapping				X I	
Stereognosis	O				
Finger Localization	X I				
Object Memory				O	
Puzzles				O	
Figure-Ground				O	
Draw A Person					X I
Motor Accuracy		X I			
Vertical Writing	X U.S.	X U.S.			
Hand to Nose	O				
Romberg	O				
Stepping	X U.S.				
Walks Line	X I	X I			
Supine Flexion	X I				
Kneel-Stand	O				
Imitation of Postures					X I
Tongue Movements		O			
Rapid Alt. Movements	X I	X I			
Maze					X I
General Information			O		
Follow Directions			X U.S.		
Articulation		O			
Sentence Repetition			O		
Digit Repetition			O		

Note. Minimal differences = 0, Iceland higher = X I, U.S. higher = X U.S.

Table 8

Comparison of the performance of Icelandic and U.S. children in age group VI on the 27 subtests of the MAP

	Foundations Index	Coordination Index	Verbal Index	Non-Verbal Index	Complex Tasks Index
Tower		O			
Sequencing				X I	
Block Designs					X U.S.
Block Tapping				X I	
Stereognosis	X I				
Finger Localization	X I				
Object Memory				O	
Puzzles				X I	
Figure-Ground				O	
Draw A Person					O
Motor Accuracy		X U.S.			
Vertical Writing	O.	O			
Hand to Nose	X I				
Romberg	O				
Stepping	X U.S.				
Walks Line	X U.S.	X U.S.			
Supine Flexion	X I				
Kneel-Stand	O				
Imitation of Postures					O
Tongue Movements		X I			
Rapid Alt. Movements	X I	X I			
Maze					O
General Information			X I		
Follow Directions			O		
Articulation		O			
Sentence Repetition			X I		
Digit Repetition			O		

Note. Minimal differences = 0, Iceland higher = X I, U.S. higher = X U.S.

Table 9

Differences in subtest performance between the Icelandic and the U.S. samples

	Age group II	Age group IV	Age group VI
Tower	X I	O	O
Sequencing	O	X I	X I
Block Designs	X U.S.	X U.S.	X U.S.
Block Tapping	O	X I	X I
Stereognosis	O	O	X I
Finger Localization	O	X I	X I
Object Memory	O	O	O
Puzzles	O	O	X I
Figure-Ground	O	O	O
Draw-a-Person	X I	X I	O
Motor Accuracy	O	X I	X U.S.
Vertical Writing	X U.S.	X U.S.	O
Hand to Nose	X U.S.	O	X I
Romberg	X U.S.	O	O
Stepping	X U.S.	X U.S.	X U.S.
Walks Line	O	X I	X U.S.
Supine Flexion	O	X I	X I
Kneel-Stand	O	O	O
Imitation of Postures	O	X I	O
Tongue Movements	X I	O	X I
Rapid Alt. Movements	X I	X I	X I
Maze	O	X I	O
General Information	O	O	X I
Follow Directions	O	X U.S.	O
Articulation	O	O	O
Sentence Repetition	X I	O	X I
Digit Repetition	O	O	O

Note. Minimal differences = 0, Iceland higher = X I, U.S. higher = X U.S.

children performed more efficiently if focused on number of children within Red and Yellow categories, that is, how the test classified Icelandic and U.S. children as "at risk." In conclusion, there appear to be noticeable differences in performance between the Icelandic sample and the U.S. normative sample on majority of the subtests of the MAP. These results relate only to age groups II, IV and VI.

CHAPTER 5

SUMMARY, DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

Summary

This study was designed to determine whether there are noticeable differences in performance between U.S. and Icelandic children on the 27 subtests of the MAP. A review of the literature indicated that differences in child development exist across cultures, and advised cautious use and interpretation of test norms in a different population than in that which the test was standardized.

Ninety Icelandic children in three age groups participated in this study. All subjects were tested with the MAP. A descriptive design was used for the comparison of subtest performance between the Icelandic children and the U.S. normative sample.

The findings of the study indicate that there appear to be minimal differences in performance between the Icelandic sample and the U.S. normative sample on several of the subtests of the MAP. On other subtests, however, there appear to be noticeable differences if focused on differences within low scores and how the test classifies Icelandic and U.S.

children as at risk.

This research provides a reference point for therapists involved with testing and identifying Icelandic children with suspected academic problems. Furthermore, it indicates that further research may be necessary to determine the applicability of the MAP in Iceland.

Discussion

In general, less range was obtained on several of the subtest scores in this study than within the U.S. standardization sample. Hence, the Icelandic children obtained fewer of the very low scores, but also did not obtain as many of the highest scores possible. This affects the interpretation of the data, as the study focused on differences within low scores (Red, and Yellow categorys), and emphasis on differences within high scores (Green category) was minimal.

Less range may be an artifact of a much smaller sample, but quite possibly the homogeneity of the Icelandic population may be a contributing factor as well. The sample (n=90) in this study is a limitation, as stated in chapter 1. However, in Iceland there exists a Census list of all citizens. As the sample was recruited from this list and attrition was minimal, it can be assumed that the sample was quite representative of Icelandic children in the capital area. Several countries do not have a

Census list, and often a selective factor like a nursery school or a day-care center is used to recruit the subjects in similar studies. It is possible that such a method of selection may contribute a confounding variable.

No differences were found between the two samples on five of the subtests. These are Object Memory (Non-Verbal Index), Figure-Ground (Non-Verbal Index), Kneel-Stand (Foundations Index), Articulation (Coordination Index), and Digit Repetition (Verbal Index). On all other subtests there were noticeable differences in performance in some of the age groups. On three subtests, differences were found across all age groups. The U.S. children performed better on Block Designs (Complex-Tasks Index), Stepping (Foundations Index) in all age groups, and the Icelandic children performed better on Rapid Alternating Movements in all age groups (Foundations and Coordination Indices). It appears that the differences obtained between the two samples are fairly evenly spread across Indices, as on some of the subtests within an Index, the U.S. children obtained a higher score and on other subtests the Icelandic children showed better skill. An exception is the Non-Verbal Index where the overall performance of age groups IV and VI of the Icelandic sample seemed to be noticeably better than that of the U.S. children. Substantial differences were also obtained in age group II on the Foundations Index, where the Icelandic children demonstrated noticeably poorer overall

performance. The Foundations and Coordination Indices include the most items and each of them assesses not a single domain, but a variety of behaviors. It appears that some of the subtests in these Indices that necessitated occlusion of vision, and combination of speed and motor accuracy caused difficulty for the Icelandic sample, as well as those that required maintainance of position while stepping or writing. In general, more differences were obtained in subtest performance among the two older age groups of Icelandic and U.S. children than among the youngest age group. On the majority of the subtests where differences occurred, the Icelandic children seemed to perform more efficiently if focused on differences within low scores, and how the test classified Icelandic and U.S. children as "at risk." The greatest differences between the two samples were obtained on the subtest Stepping where the U.S. children performed substantially better as displayed in Figure 15. A high percentage of the Icelandic children in age group II were unable to keep their eyes closed for the twenty second interval required, and some of the older children as well. Substantial differences were also obtained in age group VI on Walks Line (table 15), as the Icelandic children had difficulties adhering to both the time limit and the accuracy required (number of errors).

The relatively same trend was not necessarily found within all three age groups on several of the subtests. Hence, the Icelandic children

performed similarly to the U.S. normative sample on a few of the subtests in one or two age groups, but noticeable differences were found in other age groups. The U.S. sample performed better on Hand to Nose in age group II while the Icelandic sample performed better in age group VI. On Walks Line the U.S. sample performed substantially better in age group VI, but the Icelandic sample performed better in age group IV. On Follow Directions, the performance of the two samples was quite similar for age group II and VI but noticeable differences were obtained for age group IV, where the U.S. sample performed substantially better than their Icelandic counterparts. This finding may reveal the necessity of studying the translation of the specific items in the subtest, to determine whether this may have contributed to this result. Another possible explanation is that the MAP's item content varies across age groups. Hence, the materials used for several of the subtests are different for each age group, which may imply differences in item difficulty and distribution. Comparison of the other subtests in the Verbal Index did not indicate specific problems with the Icelandic translation, and differences within this Index were not more prominent than within other Indices.

Minimal differences were obtained between the performance of the Icelandic children in age groups IV and VI on a few of the subtests and on Romberg, the raw score and the percentile ranking of the younger age

group was slightly higher than of age group VI. It is not clear whether these findings are artifacts of the sample tested or whether the subtest does not discriminate appropriately between these age groups of Icelandic children. In Puzzle, age group VI, all of the Icelandic children succeeded in performing the two tasks required. Hence, the subtest was not sensitive to children who might be "at risk" in this age group.

Today, several countries are conducting crosscultural research on the MAP. It would be valuable to compare the results from the different studies to determine if differences occur more on certain items than on others. Some of the subtests of the MAP are thought to measure central nervous system maturity, especially the scales in the Foundation Index. Other subtests are more related to learned behavior (Cognitive and Combined abilities). Hence, it would be interesting to explore and determine, if possible, if the differences obtained appear to be due to genetic influences, or to cultural variations. However, as the procedures, and research designs that are utilized in each country vary, it may be difficult to compare the findings.

Several of the findings of this study are in accordance with the results from the crosscultural study that was undertaken in Israel (Schneider, Parush, Katz, & Miller, 1993). The Israeli children performed at a significantly lower level than the U.S. sample on the Foundations Index.

The Icelandic children in age group II also performed at substantially lower level than the U.S. children, but it would seem that the overall differences among age group IV and VI are not as striking, as on some of the subtests the U.S. children performed better, but on other subtests the Icelandic children performed better. Furthermore, it appears that the Israeli children had problems with some of the same subtests in the Index as the Icelandic children in this study (Stepping, Vertical Writing, and Walks Line). However, on subtest Rapid Alternating Movements, the Israeli children performed at a lower level than the U.S. children, which is opposite of the finding among the Icelandic children. On a few subtests, the Israeli children performed at a significantly higher level than their U.S. counterparts (Puzzle and Finger Localization). The Icelandic children also demonstrated somewhat better performance than the U.S. sample on these items, although it is not known whether the differences are significant. The Israeli study only included age groups II and VI. Information on the performance of Israeli children in age group IV was not obtained and, therefore, cannot be compared.

In the crosscultural study that was undertaken in Japan, publications to date include results of only nine subtests were compared to the U.S. normative data. Hence, it is more difficult to compare their results to the findings obtained in this study. In general, the Japanese

children performed significantly better than the U.S. children on items related to eye-hand coordination. On two subtests (Supine Flexion and Tongue Movements) the U.S. children performed significantly better. As information is missing on 16 of the subtests, it is not possible to compare the overall performance on the 27 subtests. However, from the information available there appear to be differences in performance between Japanese and Icelandic children. As an example, in two of three age groups the Icelandic children performed better than the U.S. sample on Tongue Movements and Supine Flexion, and minimal differences were found in one age group.

Implications

Comparability of a test among different cultural groups is an important issue in crosscultural research, as stated in chapter 2. The aspects of instrument bias and validity are of particular importance and should be addressed and studied. According to Gregory (1992) an essential criterion of nonbias is that the factor structure of test scores should remain invariant across respective population. The sample size in this study did not allow a meaningful factor analysis. A second criterion of nonbias in construct validity is that the rank order of item difficulty within a test should be highly similar for the two populations (Jensen, 1980).

This study demonstrated noticeable differences on several of the subtests, however, the study did not address the rank order of items within subtests. Hence, the question of bias is not answered in this study.

Further studies on the MAP in Iceland may be needed to assure valid decisions about the presence of dysfunction in Icelandic children, and thus to determine the applicability of the test within the Icelandic preschool population. It is desirable to study the MAP in Iceland independent of its use in the United States, as well as to further compare the performance of Icelandic and U.S. children . As the raw scores from the U.S. standardization sample were unavailable, it was not possible to test statistically whether there are significant differences between the two samples. Furthermore, this study focused on performance on the 27 subtests of the MAP only. It did not establish how subtest scores of the Icelandic sample translate into Total Score and Performance Index Scores.

According to the author, Dr. Lucy Jane Miller, a new standardization of the MAP is planned in the United States in the near future. In the new version of the scale, the norms will be presented in standard scores. This will provide opportunity for a more extensive comparison, as well as research on the technical adequacy of the test within the Icelandic preschool population.

The MAP has not been used as a screening tool in Iceland to assign children into different programs. Therefore, the issue of the established cutpoints has not been essential, except for their effect on the Total Score. This study provides some information on how the test distinguishes between Icelandic children. However, it is necessary to examine further the usefulness of the cutpoints for the Icelandic preschool population if they are to be used to determine the need for intervention. Furthermore, it would also be valuable to study score patterns among various Icelandic clinical groups and samples of exceptional children and compare these with the MAP score patterns based on an U.S. dysfunctional population. (Miller, 1988b)

Recommendations

As a result of this study, a number of recommendations can be made for further research to determine the applicability of the MAP for the Icelandic preschool population.

Crosscultural Comparisons:

1. Instrument bias.

- Examine whether the factor structure of test scores is the same within the Icelandic and the U.S. population.

- Determine further whether test items are relatively easier or more difficult for the Icelandic preschool population than for the U.S. population.

Study the MAP in Iceland independent of its use in the United States:

1. Content validity: Study the degree to which the items on the MAP are representative of the behavior of Icelandic preschoolers that the scale was designed to sample.
2. Concurrent validity: Compare the MAP to other scales to provide evidence of the convergent and discriminant validity of the MAP within the Icelandic preschool population.
3. Temporal Stability: Administer the MAP twice to the same group of children over time and determine the test-retest correlation coefficient within the Icelandic preschool population.
4. Predictive validity: Determine the value of the MAP as a predictor of later school problems within the Icelandic preschool population.
5. Examine further the usefulness of the 5% and 25% cutpoints for the Icelandic preschool population.
6. Study score patterns among an Icelandic dysfunctional population and compare these with MAP score patterns based on a U.S. dysfunctional population.

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APPENDIX A

Figures displaying the percentile rank order for the Icelandic and U.S. samples

Figure A-1. Reference guide for item score sheet. Icelandic age group IIa (3´3 - 3´8).

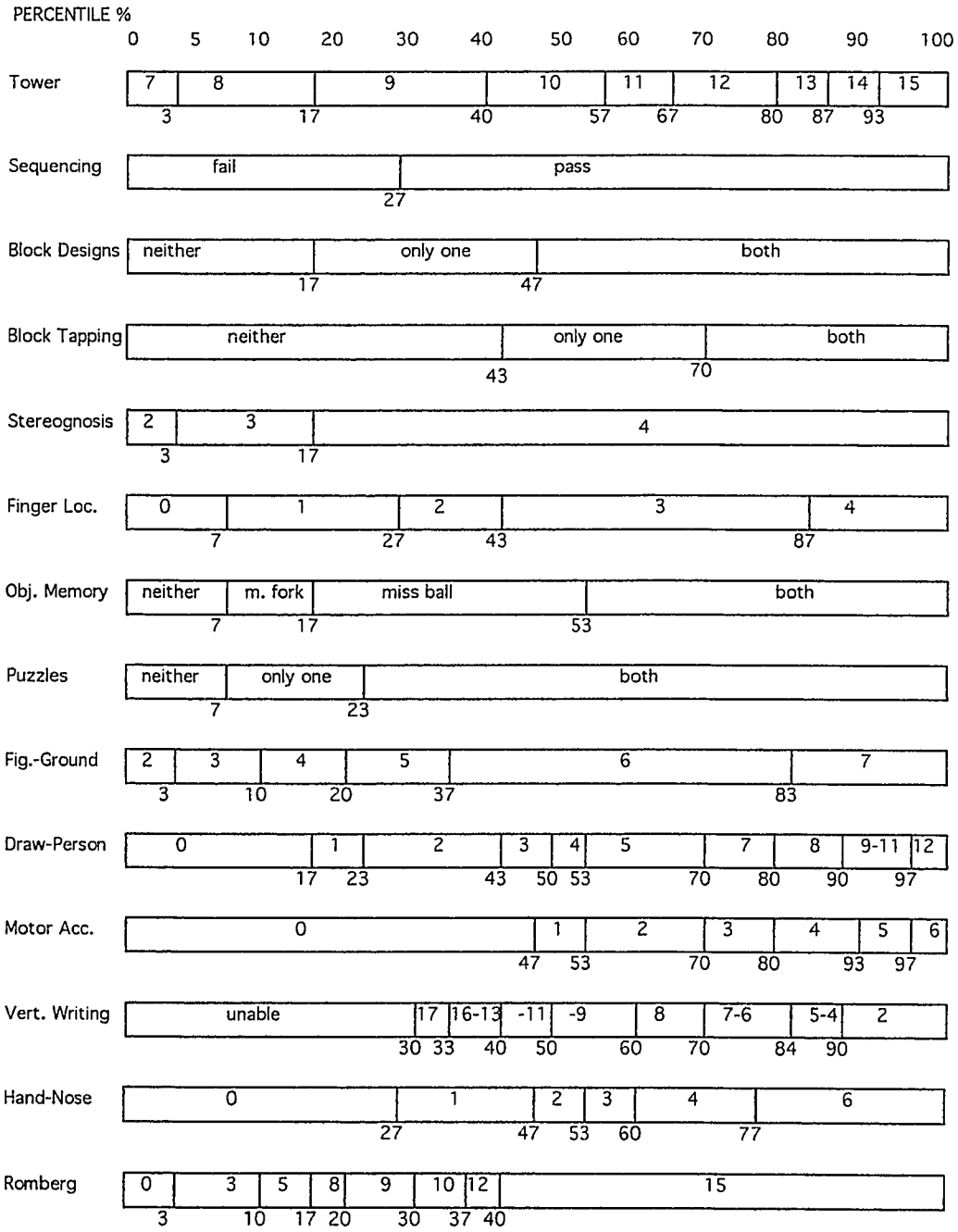


Figure A-2. Reference guide for item score sheet. Icelandic age group IIb (3'3 - 3'8).

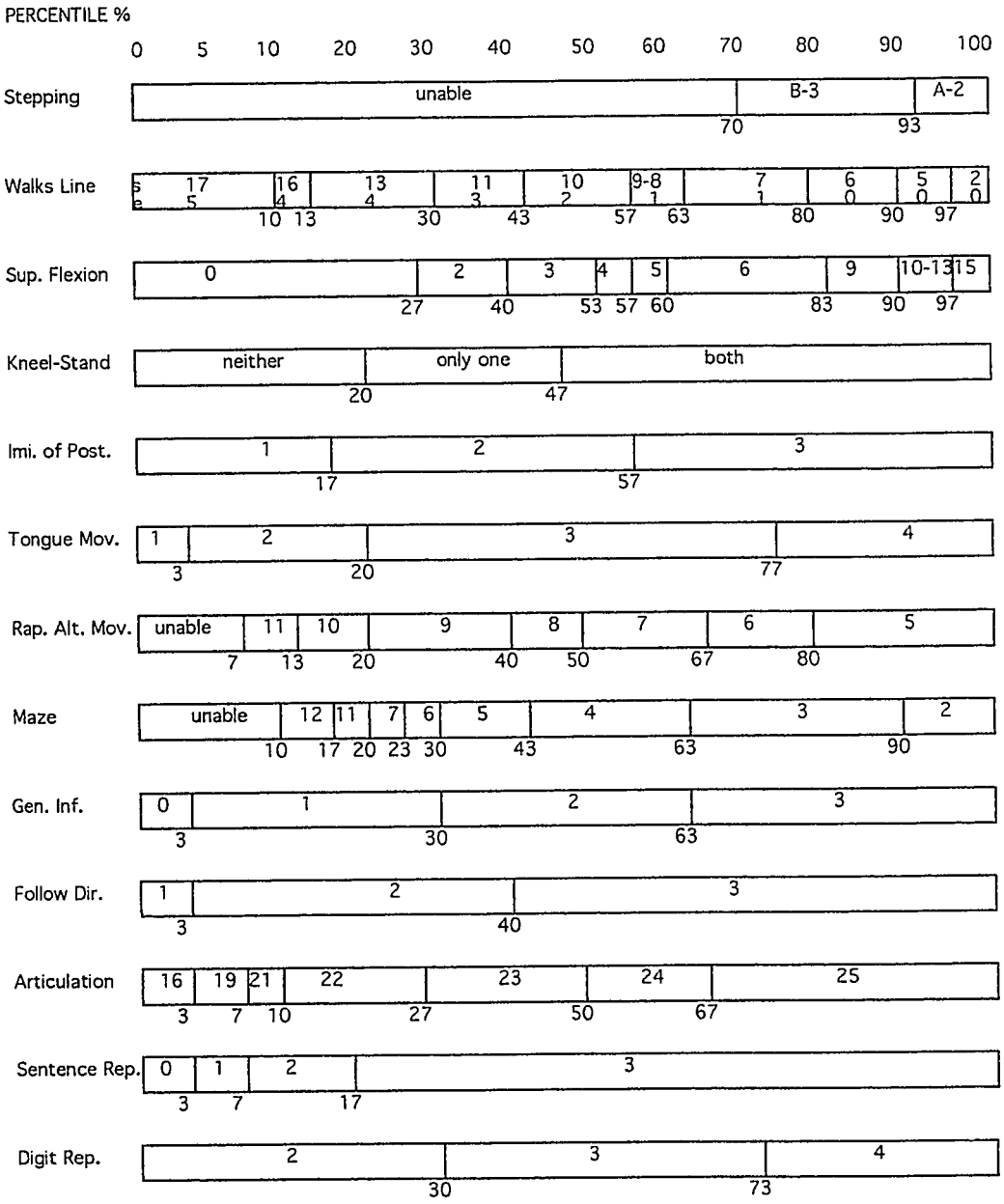


Figure A-3. Reference guide for item score sheet. Icelandic age group IVa (4´3 - 4´8).

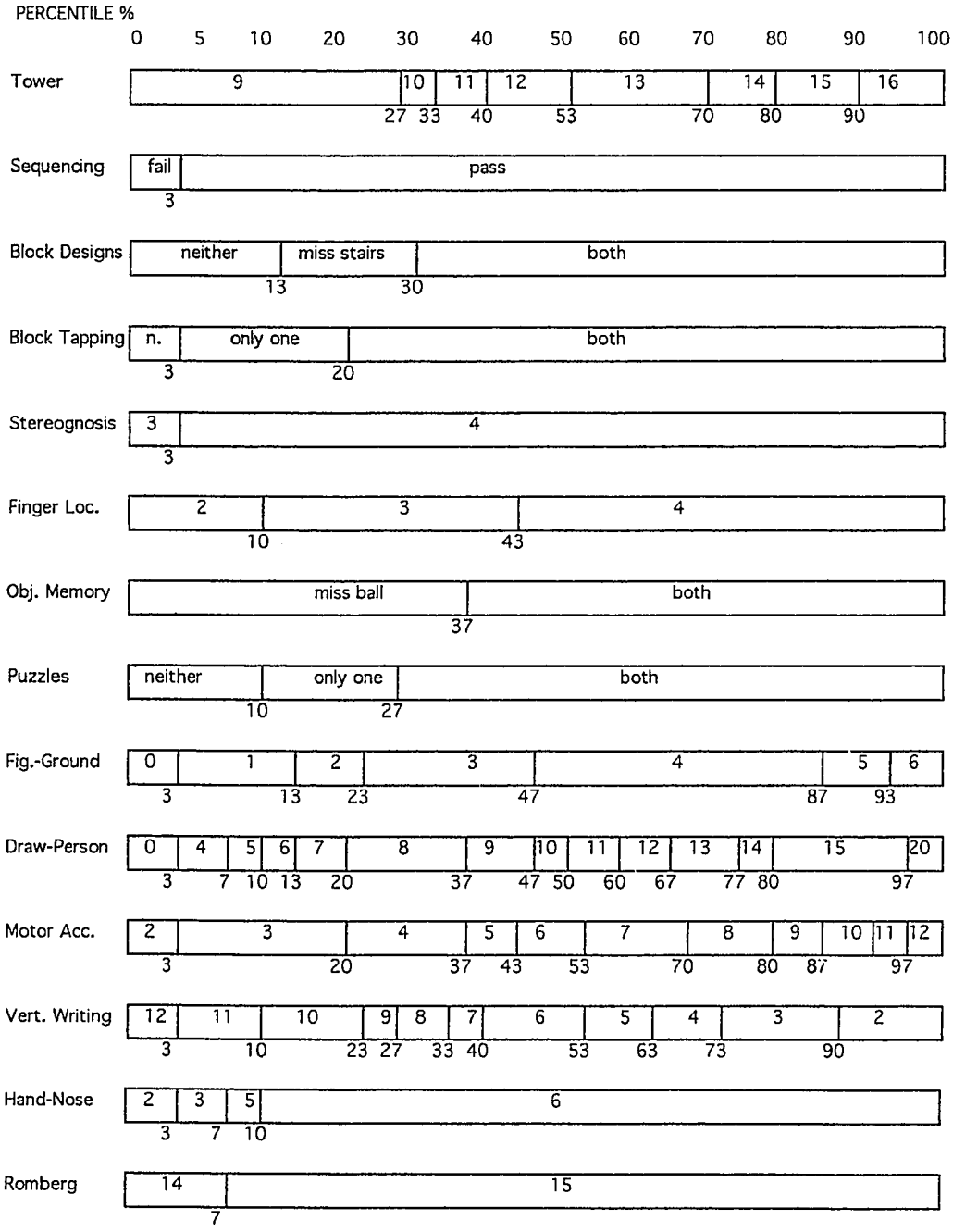


Figure A-4. Reference guide for item score sheet. Icelandic age group IVb (4´3 - 4´8).

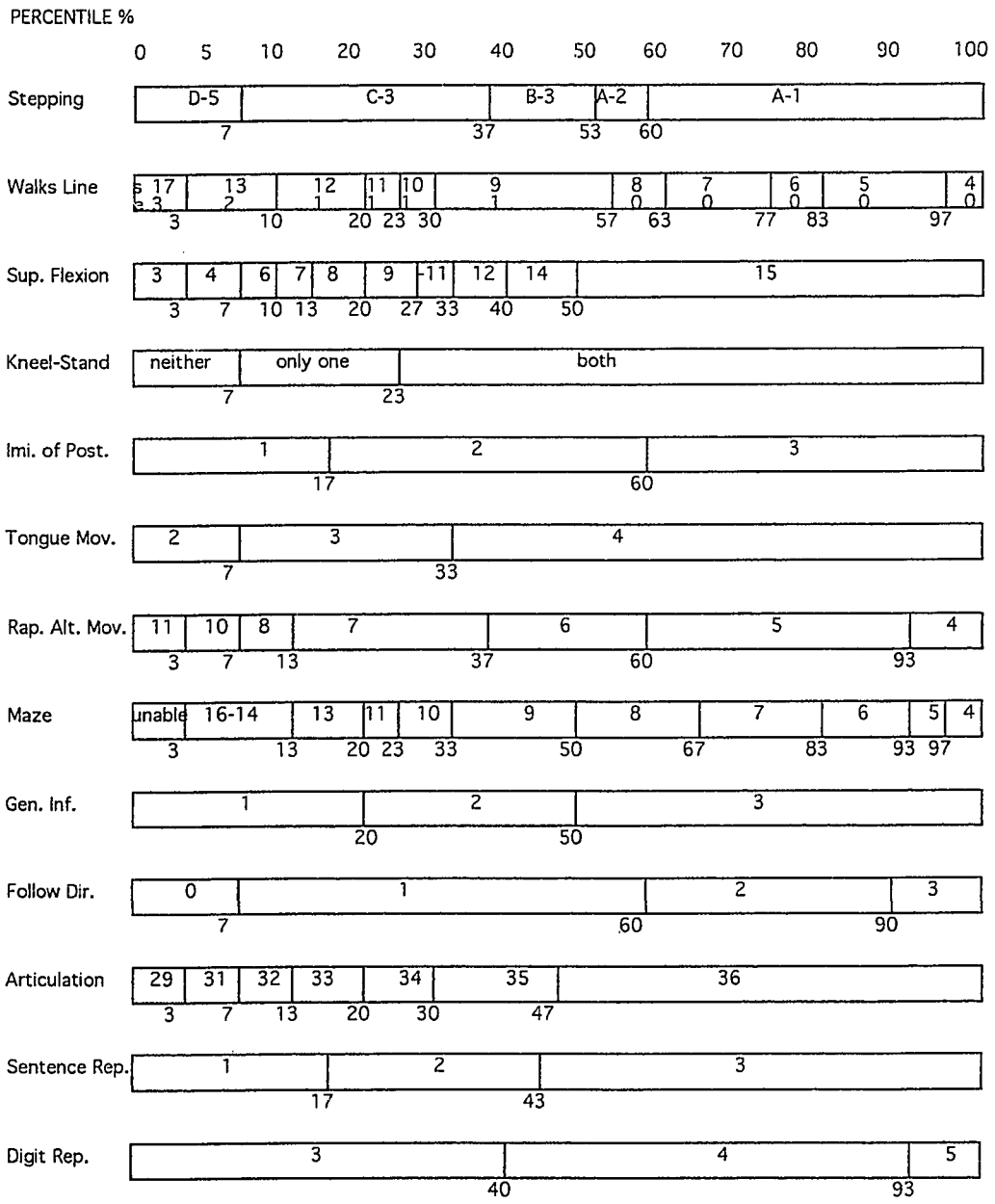


Figure A-5. Reference guide for item score sheet. Icelandic age group VIa (5´3 - 5´8).

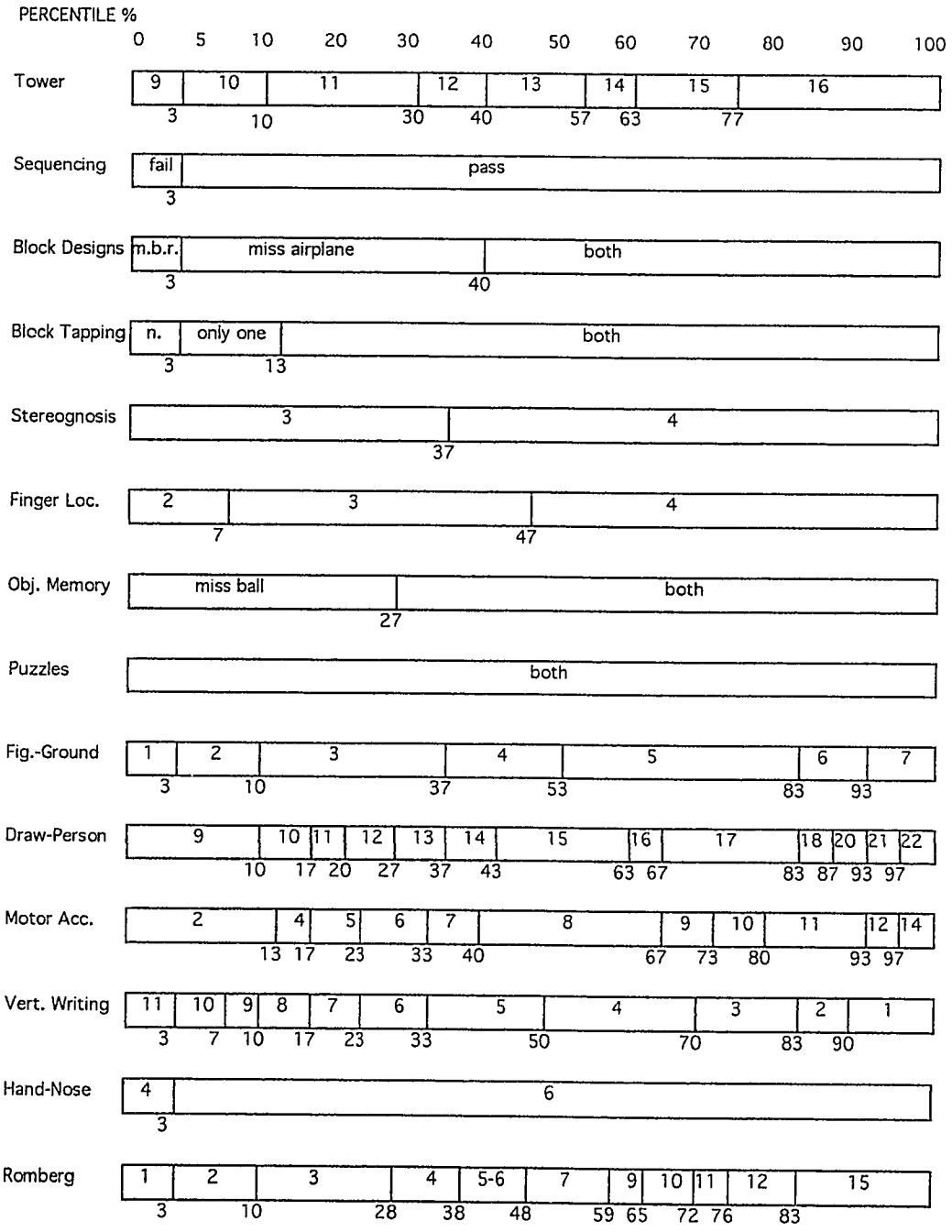


Figure A-6. Reference guide for item score sheet. Icelandic age group VIb (5´3 - 5´8).

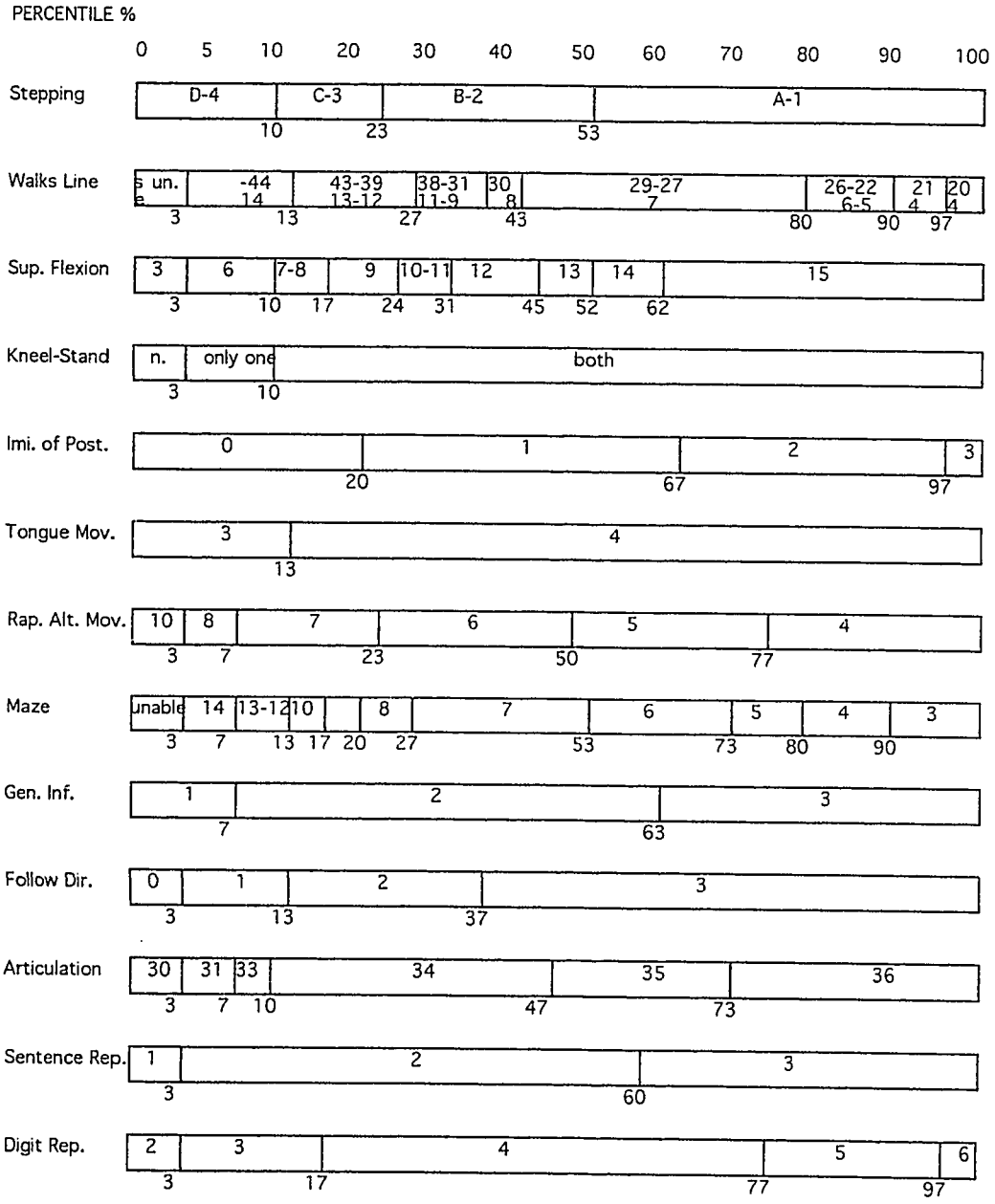


Figure A-7. Reference guide for item score sheet. U.S. age group IIa (3'3 - 3'8).

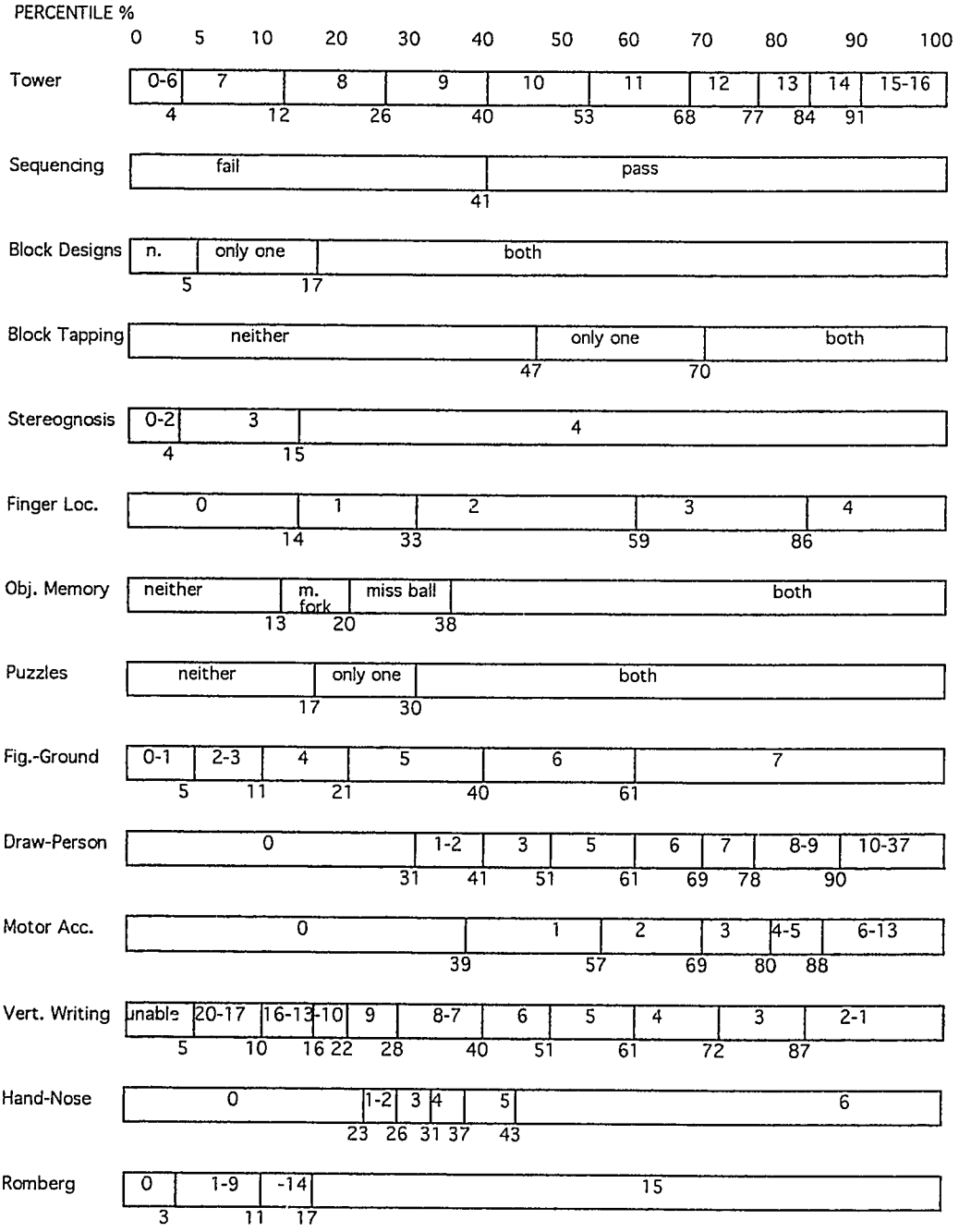


Figure A-8. Reference guide for item score sheet. U.S. age group IIb (3′3 - 3′8).

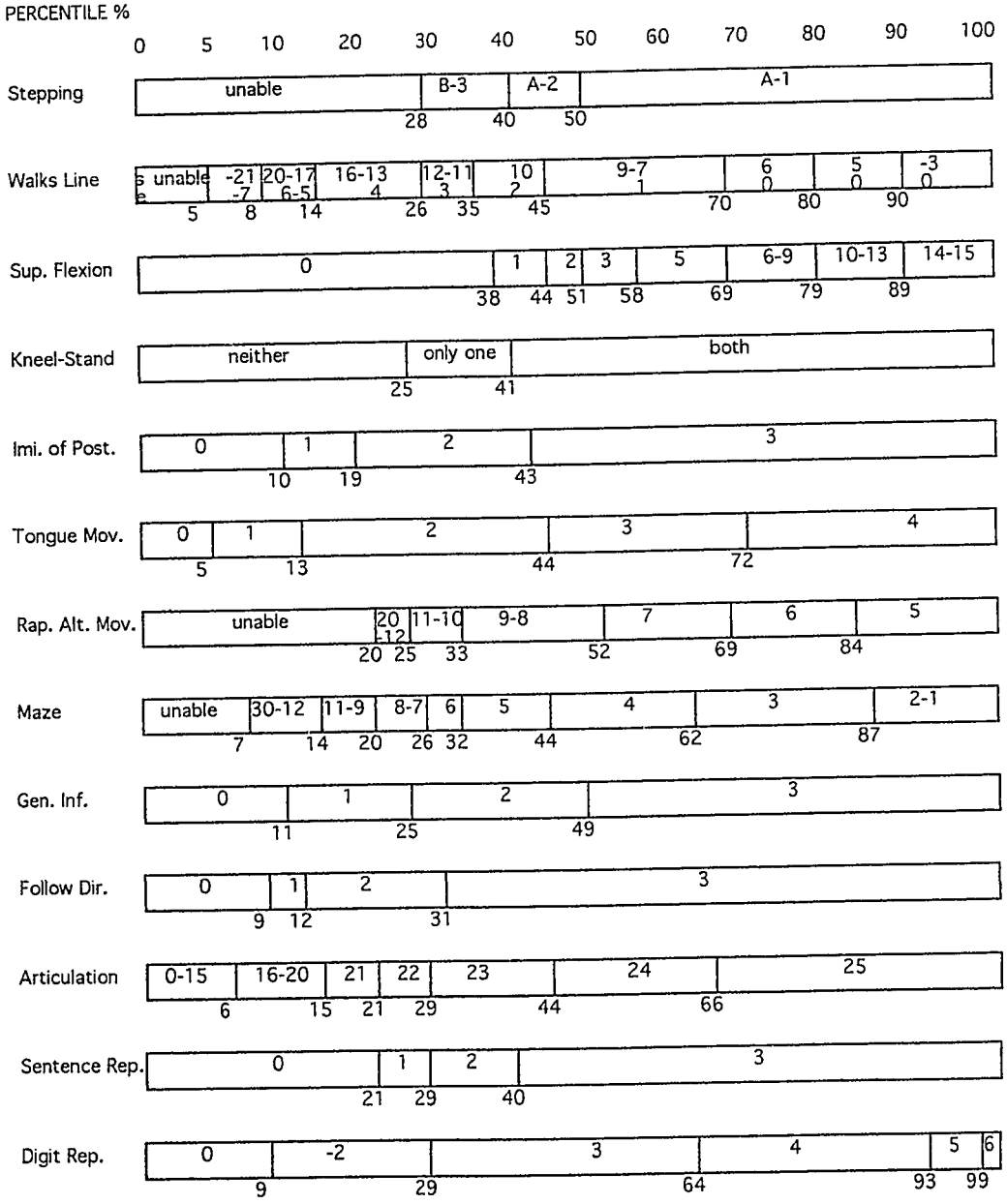


Figure A-9. Reference guide for item score sheet. U.S. age group IVa (4′3 - 4′8).

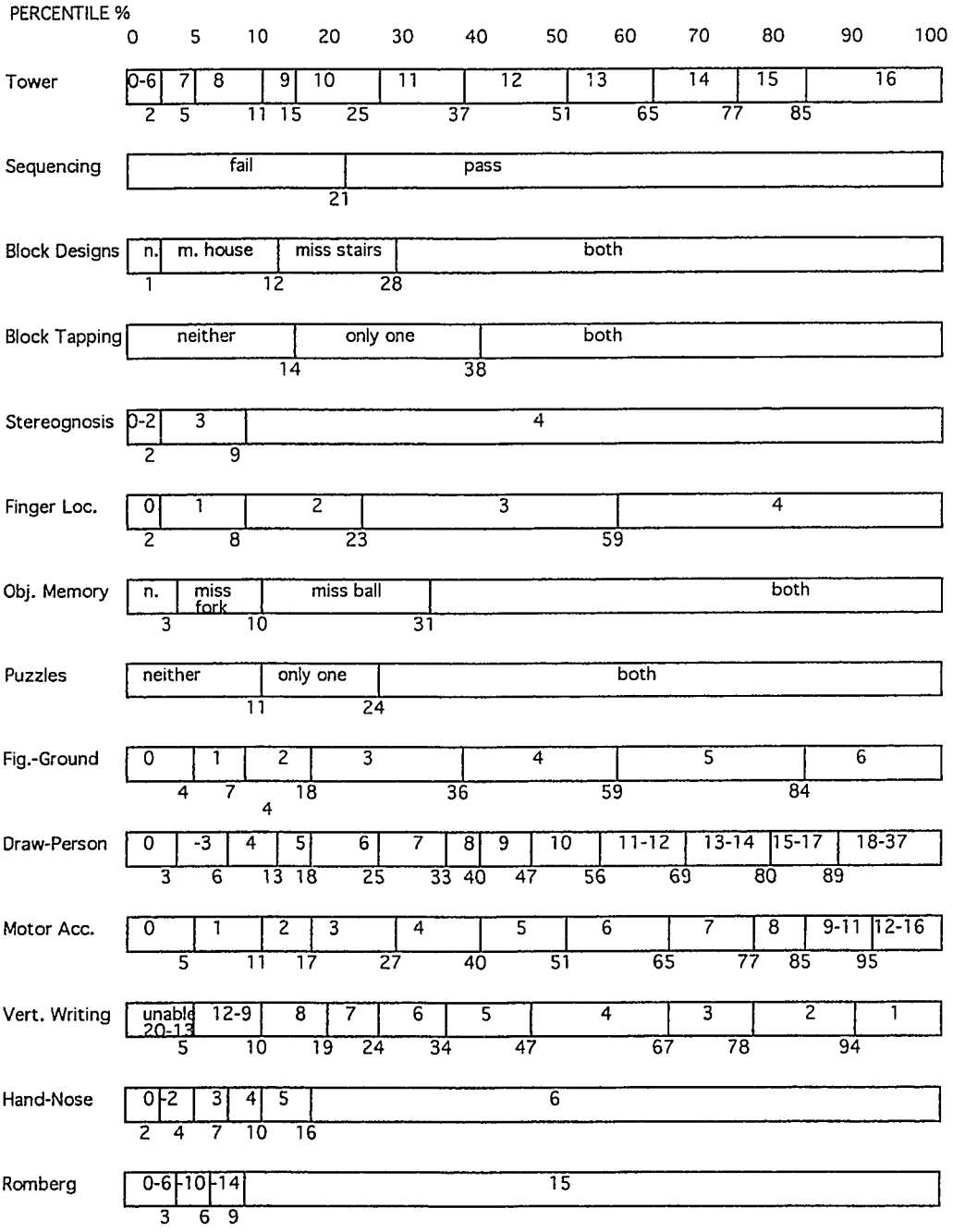


Figure A-10. Reference guide for item score sheet. U.S. age group IVb (4′3 - 4′8).

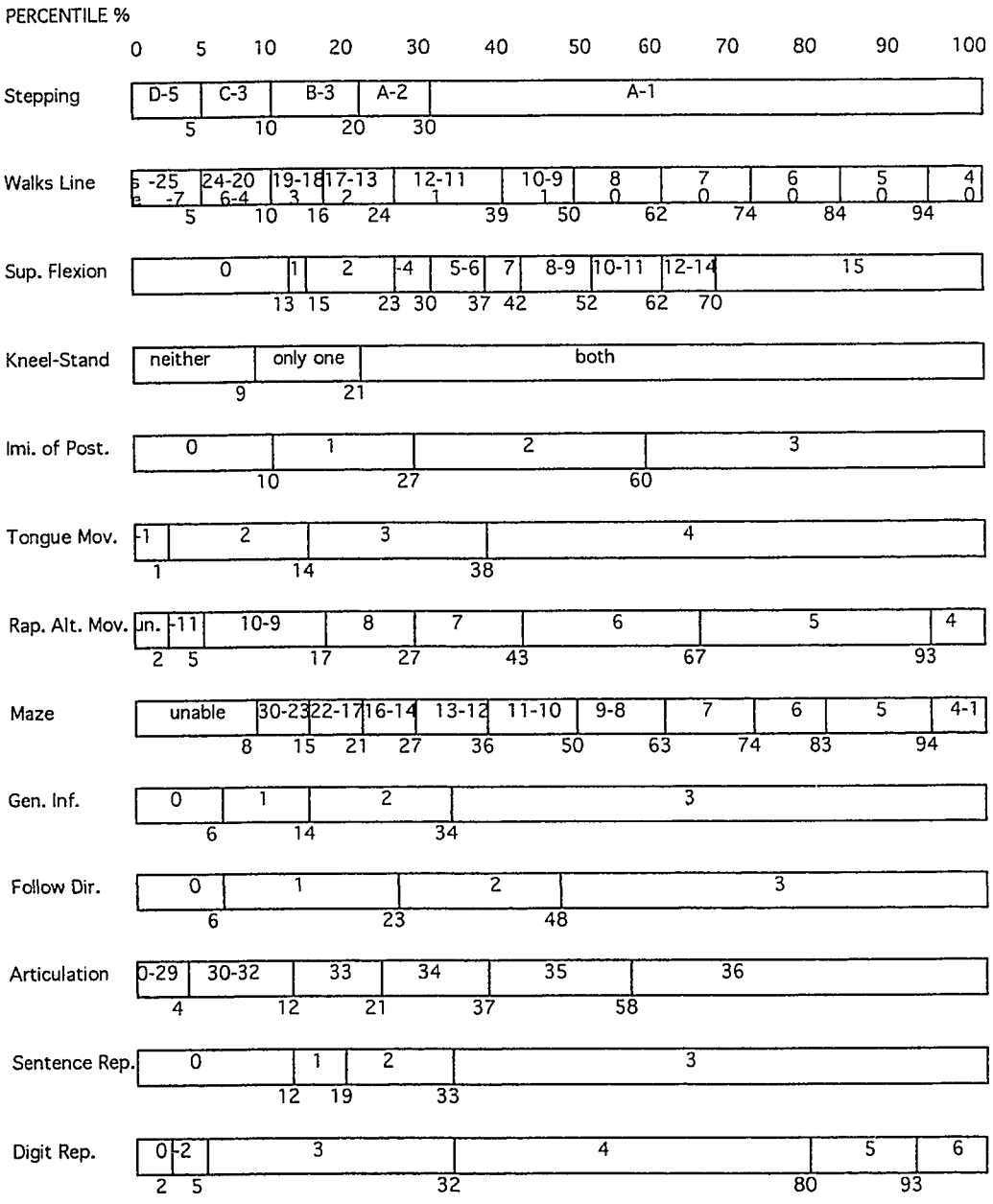


Figure A-11. Reference guide for item score sheet. U.S. age group VIa (5′3 - 5′8).

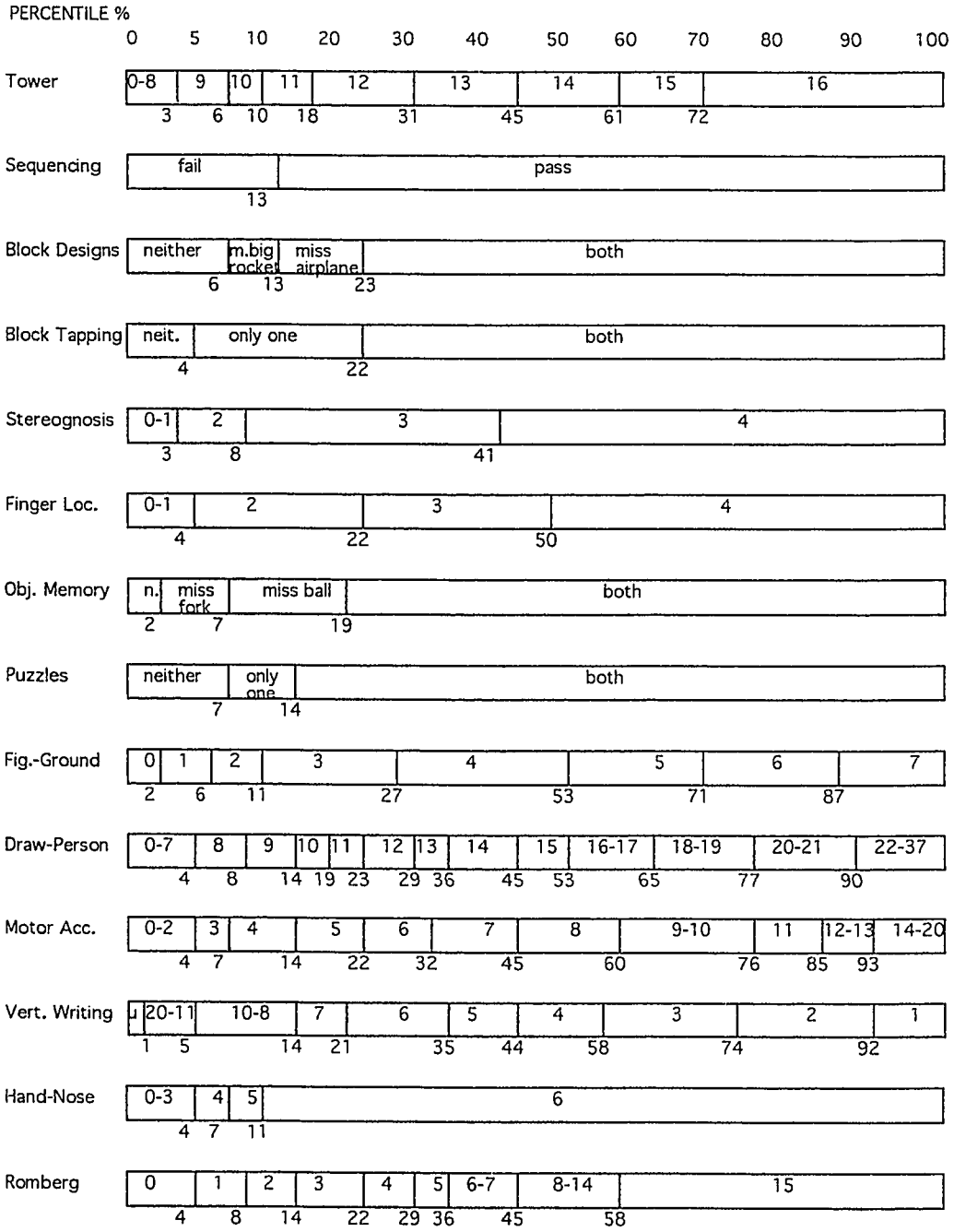
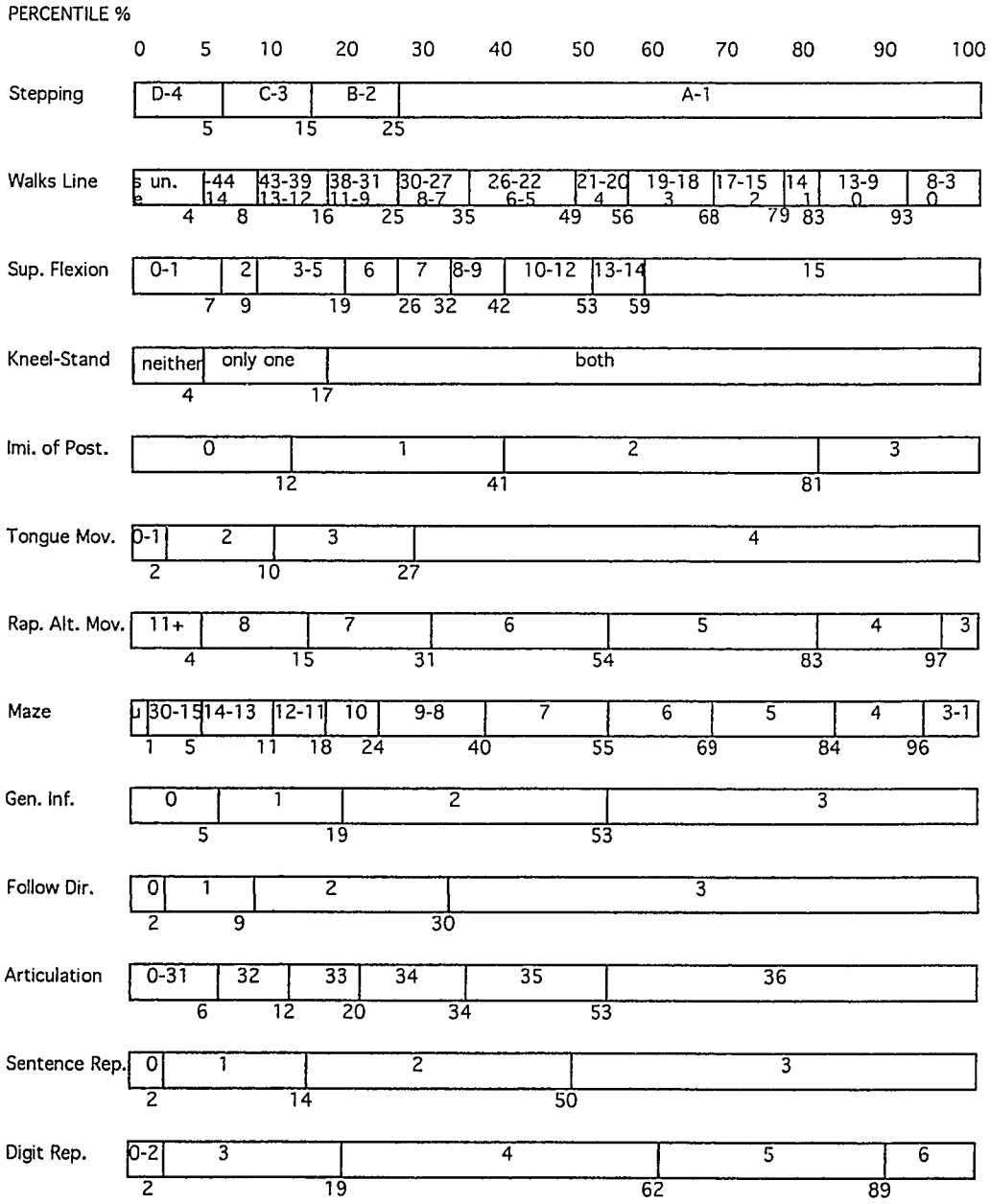


Figure A-12. Reference guide for item score sheet. U.S. age group VIb (5′3 - 5′8).



APPENDIX B

Consent for research at facility

STATE DIAGNOSTIC AND
COUNSELLING CENTER,
Digranesvegur 5, 200 Kópavogur, Iceland.
Tel. 354-1-641744. Fax. 354-1-641753.

Kópavogur, 11. mars, 1993.

To whom it may concern:

This is to certify that Snaefridur Thora Egilson, graduate student in Occupational Therapy, will gather data for her study:

> "Comparison of the Norms of Icelandic Children to the Norms of U.S. Children on the Miller Assessment for Prescholler: Pilot Study"

at this institution in August/September of this year.

The subjects are healthy Icelandic preschoolers.

The planning and implementation of the study are in full accordance with the standards of the institution.

Respectfully.

Stefán Hreiðarsson,
Medical Director.

APPENDIX C

Informed consent for subjects

SJSU SAN JOSE STATE UNIVERSITY

A campus of The California State University

College of Applied Sciences and Arts • *Department of Occupational Therapy*
One Washington Square • San José, California 95192-0059
Main Office: 408/924-3070 • Fieldwork Office: 408/924-3078 • FAX: 408/924-3088

Consent form

AGREEMENT TO PARTICIPATE IN RESEARCH
Responsible Investigator: Snaefridur Thora Egilson

Title of Protocol: Comparison of the norms of Icelandic children to the norms of U.S. children on the Miller Assessment for Preschoolers: A Pilot Study.

1. My child has been asked to participate in a research study comparing the norms for Icelandic and U.S. children on a scale used to evaluate preschoolers. (The Miller Assessment for Preschoolers - MAP).

2. The Miller Assessment for Preschoolers (MAP) will be administered to my child at the State Diagnostic and Counselling Center or at his/her preschool setting in August, 1993.

3. There is only minimal risk anticipated in participating in the study, no greater than encountered in daily life.

4. There are no benefits expected to my child from this study.

5. Although the results of the study may be published, the name of my child will not be used to identify the results of the investigation.

6. Questions about the research may be adressed to the principal investigator (901-408-725-8221 USA or 91-641744 Iceland). Complaints about the research may be presented to the respective Department Chair, (Lela A. Llorens, Ph.D. OTR, FAOTA, 901-408-924-3070) Questions or complaints about the research, subjects´ rights, or research-related injury may be presented to Serena Stanford, Ph.D., Associate Vice President of Graduate Studies and Research, at (901-408-924-2480).

7. I understand that I will be asked to fill out forms with biographical information and answer questions regarding the health of my child.

8. My child may have the opportunity to participate in a follow up study, if this will be performed at a later time.

9. My child is free to discontinue participation at any time during the study.

10. This consent is given voluntarily.

11. I have received a signed and dated copy of this consent form.

_____ _____

Parent's signature Date

_____ _____

Investigator's Signature Date

SJSU SAN JOSE STATE UNIVERSITY

A campus of The California State University

College of Applied Sciences and Arts • *Department of Occupational Therapy*
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SAMÞYKKI Á ÞÁTTTÖKU Í RANNSÓKN
Rannsóknaraðili: Snæfríður Þóra Egilson.

Heiti rannsóknar: Samanburðarrannsókn á þroskaprófi Miller fyrir forskólabörn.

1. Óskað hefur verið eftir að barnið mitt taki þátt í samanburðarrannsókn á þroskaprófi Miller fyrir forskólabörn.

2. Þroskapróf Miller fyrir forskólabörn verður lagt fyrir barnið mitt á leikskóla þess eða á Greiningar- og Ráðgjafarstöð Ríkisins síðari hluta ágústmánaðar eða í byrjun september næstkomandi.

3. Ekki er talin nein áhætta samfara þátttöku í prófinu umfram það sem ætla má í daglegu lífi.

4. Barnið mitt mun ekki hafa beinan ágóða af rannsókninni.

5. Þrátt fyrir að niðurstaða rannsóknarinnar verði kunngerð, þá mun nafn barnsins hvergi koma fram.

6. Upplýsingar um rannsóknina veitir Snæfríður Þóra Egilson, iðjuþjálfi á Greiningar- og Ráðgjafarstöð Ríkisins (s. 641753). Hægt er að koma athugasemdum eða kvörtunum ef einhverjar eru, á framfæri við Dr. Lelu A. Llorens deildarforseta iðjuþjálfunardeildar háskólans í San Jose (sími 901-408-924-3070) eða til Dr. Serenu Stanford varaforseta deildar um framhaldsnám og rannsóknir (sími 901-408-924-2480).

7. Mér er ljóst að ég mun verða beðin(n) um að veita upplýsingar um eigin menntun og starf, svo og heilsufar barnsins míns.

8. Verði rannsókninni fylgt eftir síðar meir, getur komið til þess að haft verði samband við okkur á ný.

9. Barnið mitt getur hætt þátttöku í rannsókninni hvenær sem ég óska eftir því.

10. Samþykki þetta er veitt af fúsum og frjálsum vilja.

11. Ég hef fengið í hendur undirritað og dagsett afrit af þessu bréfi.

Undirskrift foreldris	Dagsetning
Undirskrift iðjuþjálfa	Dagsetning

APPENDIX D

Developmental history

Developmental History

(to be completed by parents)

Pregnancy and birth

Previous pregnancies
Number: _____ Problems (J/N): _____

History of pregnancy with this child:
Health of mother (good/not good): _____ Use of medication (J/N): _____

Length of pregnancy (number of weeks): _____

Complications during pregnancy (J/N): _____ What kind: _____

_____

Labor and delivery:
Natural (vaginal) (J/N): _____ Use of forceps (J/N): _____

Length of labor (hrs): _____ Caesarean section (J/N): _____

Other complications in relation to labor or delivery (J/N): _____

What kind: _____

EARLY HISTORY

Condition of newborn:
Weight (gr.): _____ Length (cm): _____

Breathed immediately (J/N):_____ Cried immediately (J/N): _____

Other Comments: _____

_____

Feeding:
Did your child have any difficulty sucking as an infant (J/N): _____

Was he/she breastfed (J/N): _____

Did he/she repond well to solid food: (J/N): _____

Other comments: _____

_____

Sleeping patterns:
Did your child sleep well as an infant (J/N): _____

Other comments: _____

_____

Activity level:
Was the child relatively calm or did he/she require a lot of attention.
Describe briefly: _____

_____

Toilet training:
How old was your child when he/she was toilet trained: _____

Any problems regarding toilet training (J/N): _____ What kind: _____

_____

Medical history:
Frequent hospitalization (J/N): _____ Reasons: _____

Allergies or Asthma (J/N): _____ Ear infections (J/N): _____

Other problems (J/N): _____ What kind: _____

_____

Developmental milestones:
How old was the child when he/she could:

sit alone _____ first words _____ drink from a cup _____

crawl _____ 2-word sentence _____ dress self _____

stand alone _____ 3- to 4-word sentences _____ use spoon_____

walk _____ ask questions _____ use knife _____

run _____

Any unusual behaviors or problems:

Head banging (J/N): _____ Temper tantrums (J/N): _____

Breath holding (J/N):_____ Other: _____

_____

PRESENT STATUS

Health:
Has the child been healthy the last few months (J/N): _____

If not, note frequency and type of illnesses: _____

_____

Use of medecine (J/N): _____ What kind of medecine: _____

Sleep:
Length of sleep: (hrs. pr. night)_____ Comments on sleeping habits: _____

_____

Eating patterns:
Does your child eat a variety of food (J/N): _____

Are there any problems regarding eating habits (J/N): _____ What kind: _____

_____

Activity level/Behavior
Is your child relatively calm or very active? Describe briefly: _____

_____

Does your child seem to be generally happy (J/N): _____

Does he/she require a lot of your attention (J/N): _____

Interaction with other children
Does your child prefer playing with:

Own age: _____ Older cildren: _____ Younger children: _____

Does your child make friends easily (J/N): _____

Does your child frequently fight with other children (J/N): _____

Play and leisure:
Does your child show interest in variety of play (J/N): _____

What kind of toys or play does the child prefer: _____

Does he/she like to watch televison (J/N): _____ Daily hrs: _____

Daycare:
Does your child attend preschool or other type of daycare (J/N): _____

Hrs. per week: _____

Describe coordination: _____

_____

_____

Describe language: _____

_____

_____

Note any problems: _____

_____

Note if siblings or close relatives have/had problems in school, or with learning in general (J/N): _____

What kind of problems: _____

_____

Biographical Information Sheet for Completition by Parents

1. **Mother's Education:**

——— less than 8 years
——— 10 years (elem. education)
——— 1-3 years in high school
——— high school graduate
——— 1-3 years in college
——— college graduate

Father's Education:

——— less than 8 years
———10 years (elem. education)
——— 1-3 years in high school
——— high school graduate
———1-3 years in college
——— college graduate

2. **Mother's Occupation:** ———————————————————

Father's Occupation: ———————————————————

3. **Marital Status:**

Parents married/living together (J/N):——— single parent(J/N):———

4. **History of Family during the Last Year:**

Moves (J/N): ———

Significant traumas or emotional upsets (J/N): ———

Other changes (J/N): ——— What kind: ———————————

———————————————————————————

5. **Community Size:**

——— More than 30,000
——— 10,000 - 29,999
——— 2,500 - 9.999
——— 500 - 2,499
——— 100 - 499
———Less than 100

Þroskasaga

(fyllist út af foreldrum)

MEÐGANGA OG FÆÐING

Fyrri meðgöngur:
Fjöldi: _____ Vandamál við fyrri meðgöngur (J/N):_____

Meðganga barnsins:
Heilsa móður (góð/erfið):_____ Notkun lyfja (J/N): _____

Meðgöngulengd (vikufjöldi): _____

Voru erfiðleikar eða vandamál tengd meðgöngu (J/N): _____ Hver: _____

_____

Fæðing:
Eðlileg (J/N): _____ Notkun tanga eða sogklukkna (J/N): _____

Fæðingartími í klst: _____ Keisaraskurður (J/N): _____

Voru aðrir erfiðleikar eða vandamál tengdir fæðingu barnsins (J/N): _____

Hverjir: _____

_____

FYRSTU MÁNUÐIR OG ÁR

Ástand barnsins við fæðingu:
Þyngd (merkur): _____ Lengd (cm): _____

Andaði strax (J/N): _____ Grét strax (J/N): _____

Annað: _____

_____

Matargjöf:
Tók barnið vel við brjósti eða pela (J/N): _____

Tók barnið síðar vel við annarri fæðu (J/N): _____

Annað: _____

Svefnvenjur:
Svaf barnið vel (J/N): _____

Annað: _____

Virkni:
Var barnið yfirleitt rólegt eða var það fyrirferðamikið. Lýsið stuttlega:_____

_____

_____

Þrifaþjálfun:
Hve gamalt var barnið þegar það var vanið af bleyju:_____

Voru vandamál við þrifaþjálfun (J/N): _____ Hver: _____

Heilsufarssaga:
Tíðar sjúkrahúsdvalir (J/N): _____ Ástæða: _____

Ofnæmi eða Asthmi (J/N): _____ Eyrnabólgur (J/N): _____

Önnur heilsufarsvandamál (J/N):_____ Hver: _____

Þroskaferill:
Hvað var barnið gamalt þegar það gat:

setið óstutt _____ sagt fyrstu orðin _____ drukkið úr bolla _____

skriðið _____ 2ja orða setningar _____ klætt sig sjálft_____

staðið óstutt _____ 3ja-4urra orða setningar_____ borðað með skeið _____

gengið _____ spurt spurninga _____ notað hníf _____

hlaupið _____

Óvenjuleg hegðun eða vandamál:
Barði við höfði (J/N): _____ Reiðiköst (J/N): _____

Stóð á öndinni (J/N): _____ Annað: _____

_____

STAÐA MÁLA Í DAG

Heilsufar:
Hefur barnið verið við góða heilsu undanfarna mánuði (J/N): _____

Ef ekki, nefnið tíðni og tegund veikinda: _____

_____

Notkun lyfja (J/N): _____ Hvaða lyf: _____

Svefn:
Svefnlengd: (klst. á nóttu) _____ Annað um svefnvenjur barnsins:_____

_____

Matarvenjur:
Borðar barnið fjölbreyttan mat (J/N): _____

Eru vandamál tengd matarvenjum eða borðhaldi (J/N): _____ Hver: _____

_____

Virkni:
Er barnið rólegt að eðlisfari eða mikið fyrir sér? Lýsið stuttlega: _____

_____

Er barnið yfirleitt í góðu jafnvægi (J/N): _____

Krefst barnið mikillar athygli (J/N): _____

Samskipti við önnur börn:
Kýs barnið að leika við: Jafnaldra: _____ Eldri börn:_____ Yngri börn: _____

Á barnið auðvelt með að eignast vini (J/N): _____

Lendir barnið oft í útistöðum við leikfélaga (J/N): _____

Leikur og tómstundir:
Við hvað unir barnið sér best: _____

_____

Sýnir barnið fjölbreytni í leik (J/N): _____

Horfir það mikið á sjónvarp (J/N): _____

Dagvist:
Er barnið á leikskóla eða í annarri dagvist (J/N): _____

Hve lengi á dag: _____

Lýsið stuttlega hreyfifærni barnsins: _____

_____

_____

Lýsið stuttlega hvernig barnið tjáir sig: _____

_____

_____

Nefnið vandamál ef einhver eru: _____

_____

Eiga nánir ættingjar eiga við fötlun og/eða vandamál í skóla að stríða, t.d. við lestur eða skrift? (J/N): _____

Hvers konar vandamál: _____

_____

_____

Bakgrunnsupplýsingar

(fyllist út af foreldrum)

1. Menntun móður

_____ Minna en grunnskólapróf
_____ Grunnskólapróf
_____ 1-3 ár í framhaldsskóla
_____ Stúdentspróf eða samsvarandi
_____ 1-3 ár í háskóla
_____ Háskólapróf

Menntun föður

_____ Minna en grunnskólapróf
_____ Grunnskólapróf
_____ 1-3 ár í framhaldsskóla
_____ Stúdentspróf eða samsv.
_____ 1-3 ár í háskóla
_____ Háskólapróf

2. Starf móður _____

Starf föður _____

3. Hjúskaparstaða:

Foreldrar í sambúð (J/N): _____ Einstætt foreldri (forráðamaður barnsins)_____

4. Fjölskylduaðstæður síðasta árið:

Flutningar (J/N): _____

Erfiðleikar eða stóráföll (J/N): _____

Aðrar breytingar (J/N): _____ Hverjar: _____

_____

5. Búseta/stærð bæjarfélags:

_____ Fleiri en 30.000
_____ 10.000 - 29.999
_____ 2.500 - 9.999
_____ 500 - 2.499
_____ 100 - 499
_____ Minna en 100

APPENDIX E

Letter to parents

July, 1993

Dear Parent.

This letter is written in response to our conversation about a study on the "Miller Assessment for Preschoolers." As I explained to you, your child was chosen as one of 90 children on a random list from the Icelandic Census Bureau. As you kindly agreed to participate in the study, I would like to ask you to fill out the enclosed forms:

* A consent form to confirm that you agree to participate in the study. There are two copies of this form. I would like you to keep one but send the other one back to me with your signature on it.

* A list of questions regarding the child´s health and some biographical information.

Enclosed is an adressed stamped envelope, so you can get the information back to me as soon as possible.

As I stated in our conversation, all information will be kept strictly confidential and the name of your child will never appear, while or after the study.

If you want some more information about the study, I or my colleague, Hlín Guðjónsdóttir would be glad to provide it.

Thank you for your cooperation,

Snæfríður Þóra Egilson, Occupational Therapist,
State Diagnostic and Councelling Center,
Digranesvegi 5, 200 Kópavogi.
Sími: 641744

Júlí, 1993.

Ágæta foreldri.

Þetta bréf er ritað í framhaldi af samtali um fyrirhugaða rannsókn á þroskaprófi Miller. Eins og þar kom fram, var nafn barns þíns eitt af 90 nöfnum er dregin voru út í tilviljunarúrtaki vegna rannsóknarinnar. Þar eð þú hefur góðfúslega fallist á að barnið taki þátt í rannsókninni, vil ég senda þér eftirtalin gögn, sem þú ert vinsamlegast beðin(n) um að fylla út:

* Eyðublað til að staðfesta að þú samþykkir þátttöku.
  Eyðublaðið er í tvíriti og vil ég biðja þig um að halda öðru eftir, en senda hitt til baka með undirskrift þinni.

* Spurningalisti um heilsufarssögu barnsins og um menntun og störf foreldra.

Þessar upplýsingar eru nauðsynlegar vegna rannsóknarinnar og verður farið með þær sem trúnaðarmál. Þú ert vinsamlegast beðin(n) um að senda þær til baka hið fyrsta í meðfylgjandi frímerktu umslagi.

Eins og áður hefur komið fram verður gætt fyllstu nafnleyndar og mun nafn barnsins hvergi koma fram, hvorki meðan á rannsókn stendur né eftir á. Óskir þú frekari upplýsinga, þá mun ég eða Hlín Guðjónsdóttir iðjuþjálfi á Greiningar- og Ráðgjafarstöð Ríkisins, veita þær fúslega.

Með kærri kveðju og fyrirfram þökk fyrir veitta aðstoð,

Snæfríður Þóra Egilson, iðjuþjálfi
Greiningar- og Ráðgjafarstöð Ríkisins,
Digranesvegi 5, 200 Kópavogi.
Sími: 641744

APPENDIX F

Draft for phone conversation with parents

Draft for phone conversation with parents

Good afternoon!

My name is Snæfríður Þóra Egilson and I am an occupational therapist at the State Diagnostic and Councelling Center.

The reason for this call is that your child has been chosen from a random list from the Icelandic Census bureau, to participate in a study on a developmental assessment for preschoolers (Miller Assessment for Preschoolers) The study is conducted in participation with this institution and it is a part of the requirements for my Master´s study at San Jose State University in California, USA.

This assessment has been used in Iceland for 6 years, and has already been administered to hundreds´ of Icelandic children. The test consists of simple tasks and games and it is designed to assess a broad range of domains, including motor, sensory and cognitive domains. Administration time is aproximately 40 minutes. The purpose of this study is to determine whether or not the U.S. norms that we have been using, are applicable to Icelandic children.

So, I would like to ask for your permission to test (name of child). He/she would be one out of 90 children in the capital area to take the test. The test can be administered at the child´s preschool setting or here at the State Diagnostic and Councelling Center, Digranesvegur 5 in Kópavogur, according to your convenience. All information will be kept strictly confidential and the name of your child will never appear, neither during nor after the study.

Participation is on a voluntary basis. If you agree to participate, I

will send you a packet including the following forms:

* A consent form to confirm that you agree to participate in the research.
  There are two copies of this form and I would like to ask you to keep one but send the other one back to me with your signature on it.

* A list of questions about the child's health and about parent's background.

This information is necesseary to the research and will be treated confidentially.

You will also get a self adressed stamped envelope so you can get the information back to me in a convenient way. If you want some more information about the study, I would be glad to provide it.

Drög að símtali við foreldra

Ég heiti Snæfríður Þóra Egilson og er iðjuþjálfi við Greiningar- og Ráðgjafarstöð Ríkisins.

Ástæða þess að ég hef samband við þig er sú að barnið þitt, ... hefur verið valið til þátttöku í samanburðarrannsókn á þroskaprófi (Miller) fyrir forskólabörn. Rannsóknin er hluti af Mastersverkefni mínu við háskólann í San Jose í Kaliforníu.

Þetta þroskapróf hefur verið notað á Íslandi í 5 ár og hefur það þegar verið lagt fyrir fjöldamörg börn. Prófið samanstendur af einföldum verkefnum og leikjum og er því aðallega ætlað að meta hreyfifærni og skynjun hjá forskólabörnum. Próftími er u.þ.b. 40 mínútur. Með þessari rannsókn á að athuga hvort að bandarískar viðmiðanir, sem við höfum notast við til þessa, eru marktækar fyrir íslensk börn.

Ég vil því leita eftir leyfi þínu til að fá að prófa ..... sem eitt af 90 börnum af höfuðborgarsvæðinu, sem taka þetta próf. Prófið verður lagt fyrir samkvæmt samkomulagi annað hvort á leikskóla barnsins, eða hér á Greiningar- og Ráðgjafarstöð Ríkisins, Digranesvegi 5 í Kópavogi. Það verður gætt fyllstu nafnleyndar við rannsóknina og nafn barnsins mun hvergi koma fram, hvorki meðan á rannsókn stendur né eftir á.

Þátttaka er algerlega frjáls. Ef þú samþykkir þáttöku þá mun ég senda þér eftirfarandi gögn til að fylla út:

* Eyðublað til að staðfesta að þú samþykkir þátttöku.
* Spurningalista um heilsufarssögu barnsins, og um menntun og störf foreldra.

Þessar upplýsingar eru nauðsynlegar vegna rannsóknarinnar en farið verður með þær sem trúnaðarmál. Þú færð jafnframt sent merkt umslag með frímerki, þannig að þú getir komið upplýsingunum á sem auðveldastan hátt aftur til mín.

Ef þú vilt fá frekari upplýsingar um rannsóknina, þá veiti ég þær fúslega.